A PROGRAM FOR MANAGEMENT
1958 . . . No. 8

SEPTEMBER 22, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

BUILDING MARKETING MEN

—Page 69

✔ Process Gives Aluminum Hard Coat . . . Page 80

✔ Aluminized Steel: Growth Product . . . Page 113

CONTENTS — PAGE 5

it's mainly a matter of TIMING!

When you replace a machine at the RIGHT TIME, it's the most profitable investment you can make

WHAT is the retirement age of a machine tool? Unfortunately, there's only one answer — "It depends." And it depends on so many things that there's a temptation to by-pass the precise computations and use some general approximations or rule-of-thumb estimates.

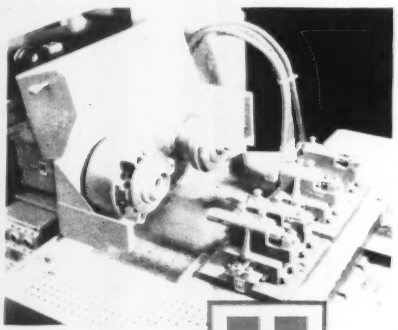
The temptation can be *costly*. For there's only one *right time* to replace a machine. A time when production cost, payoff time and carrying charges will result in the minimum net investment for your company. Too early is as bad as too late. Either way, you lose money.

If you are looking for ways to improve the profit picture, now is the time to take a good look at your replacement schedule. If the time is right, an investment in a new machine will yield a bigger return than any other investment you can make.

Heald engineers are well experienced in making obsolescence studies. And their specialized know-how in this field is available to you at any time — to help you save money by a properly timed replacement program. Similar studies by Heald engineers have pointed the way to many important cost savings.

For example: A manufacturer of centrifugal pumps had been using a Model 48A Heald Bore-Matic (1916 vintage) to bore, turn and face miscellaneous pump parts. Could it be "retired" at a *profit?* To answer the question, a cost analysis was made, in comparison with a new Heald Model 32I Bore-Matic. Based on the figures shown below, the replacement *was* made — and at a saving of $6,335 a year!

	Old Machine	New Machine
Direct and Indirect Labor, per year	$21,550	$17,230
Scrap Losses	1,803	263
Annual Maintenance	695	220
Annual Operating Cost	$24,048	$17,713
Annual Saving for New Machine		$ 6,335



YOU pay for obsolescence. Replacement pays for itself!

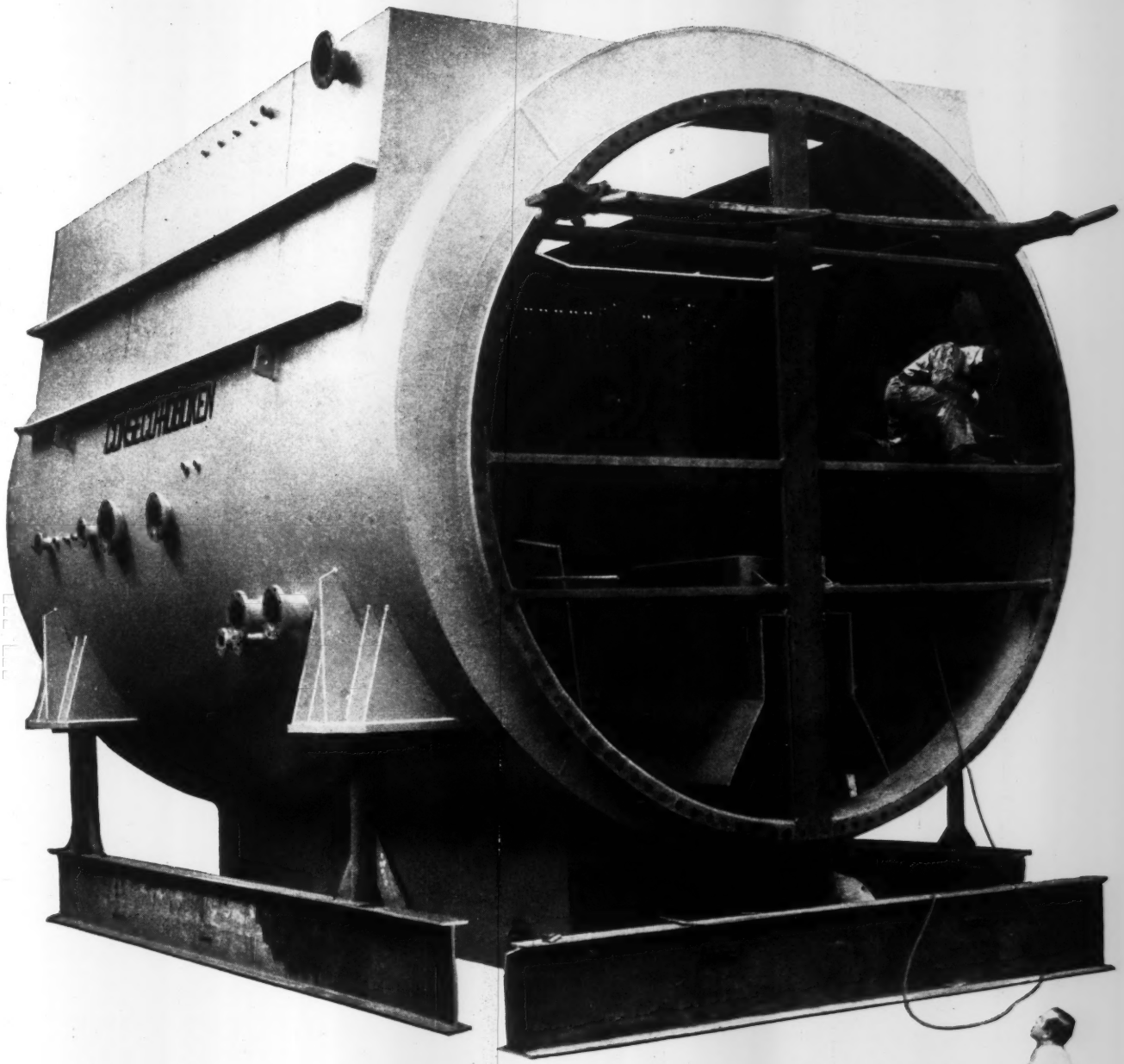
THE HEALD MACHINE COMPANY

Subsidiary of The Cincinnati Milling Machine Co.

Worcester 6, Massachusetts

Chicago • Cleveland • Dayton • Detroit • Indianapolis • New York

HEALD



Steel Plates for 100-ton Condenser

Built for New York City Transit Authority, this big condenser is one of the largest recently fabricated by Condenser Service Corp., in their shops at Hoboken, N. J. Bethlehem plates were used in its fabrication.

The uniform quality of Bethlehem plates makes them ideally suited for weldments of all sizes. The use of Bethlehem plates, together with good welding technique, is assurance of sound welds. Bethlehem plates are available in full range of sheared and universal mill sizes. Our nearest sales office will gladly give you complete information on Bethlehem plates. Or write to us at Bethlehem, Pa.

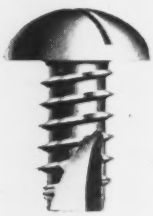
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

if you need a screw that taps its own threads select a Thread Cutting Screw from Lamson... the most complete line of fasteners in the business



top right screw: type 1
left: type 23
bottom: type 25

with these advantages: prompt delivery • available from stock • standard prices • assurance of Lamson quality • full range of sizes and shapes • can be used with or in metal or plastic

L&S

The Lamson & Sessions Co.

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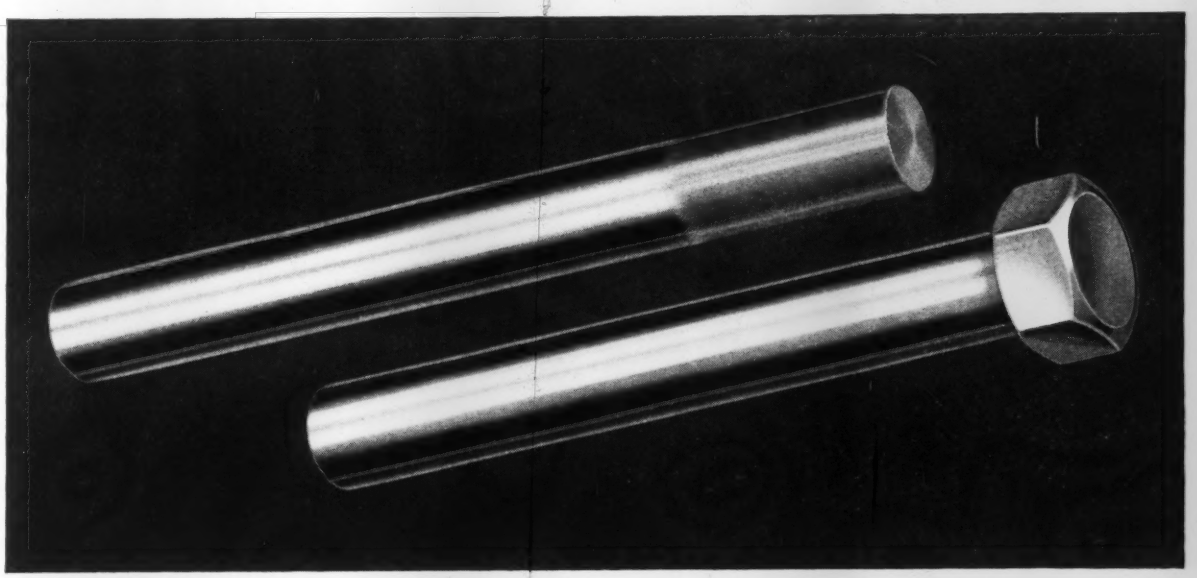
Die Life Increased Up To 400%

with TOCCO Induction Heating



● Naval Bronze, Silicon Bronze, Copper, Aluminum, Monel and all types of stainless steel are heated for forging at the H. M. Harper Co., Morton Grove, Illinois. Regardless of material TOCCO can be profitably applied to brazing, heat-treating and forging operations in almost any metal-working plant.

Production Up—In addition to the very important savings in forging dies, TOCCO has increased production to as much as 265% of output possible with former heating methods. On the 1" type 303 Stainless machine bolt blanks shown here TOCCO upped production from 75 to 200 parts per hour, using 35 K. W., 10,000 cycles.

Versatile—The same TOCCO machine is used on stock of ⅜" to 1¼" diameter, heated zones vary from ½" to 4". TOCCO'S automatic timing cycles provide complete uniformity of heating throughout both length and cross section—assuring a uniformly high quality product.

Why not have a TOCCO Engineer investigate your plant to determine where TOCCO can cut your costs and streamline your production?

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Position_____

Company_____

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Landis 10" x 20" and 10" x 24" Universal Grinders for toolroom or short runs where parts require high precision and fine finishes.

Exclusive eye-level *wheel feed* for easier operation, less chance for errors, quicker setup.

Exclusive swing-type internal grinding fixture with belt guard. Fixture does not interfere with operator when locked in raised position.

LANDIS
precision grinders
LANDIS TOOL COMPANY / WAYNESBORO, PENNA.

This Week in STEEL

The Metalworking Weekly

September 22, 1958
Vol. 143 No. 12

EDITORIAL 35

Do people like to do business with your company? If they do, your "corporate image" is good.

SPECIAL FEATURE 69

Building Marketing Men

It takes at least three years to get an integrated marketing program off the ground, so don't waste any more time. If you don't have a man who can build marketing men, you're in trouble on several counts.

WINDOWS OF WASHINGTON 44

Washington is more concerned than ever over the budget. Indications point to a freeze on defense spending.

MIRRORS OF MOTORDOM 51

Car buyers of the '60s may have a choice: Annual styling changes or gradual modifications.

THE BUSINESS TREND 55

Rise in productivity during recession changes the role of employment as an accurate indicator of business trends.

WHERE TO FIND—

Behind the Scenes 6
Letters to the Editors 10
Editorial & Business Staffs .. 16
Calendar of Meetings 29
Men of Industry 59
New Products 103
New Literature 109
Advertising Index 143

Business— METALWORKING OUTLOOK 31

- ☑ Automotive Steel Use: 10.4 Million Tons in 1958 37
- Steelworkers Endorse McDonald 38
- Missile-Rocket Potential Soars 39
- Trucktrailer Sales Bumpy 40
- Industrial Shows Go to the County Fair 41
- GE Develops X-ray System To Aid Quality Control 42
- Russia Upsets British and Dutch Tin Markets 43
- Checking Work Standards Helps Boost Efficiency 47
- ☑ Will Your Firm Die with Its Keyman? 48
- Lukens Markets Matched Plates and Electrodes 65
- ☑ Building Marketing Men—No. 8 in 1958's Management Series .. 69

Production— TECHNICAL OUTLOOK 79

- ☑ New Hard Coat for Aluminum—Wear and heat resistance better 80
- ☑ Handling System Trims Sash Cost—Cost crisis story 82
- ☑ Buttwelder Leaves No Flash—Pipe fabricators will benefit 84
- Wire Fabric Heats Parts—You wrap it around containers 85
- Tungsten Carbide Rollers Are Tough—Three types are in use .. 86
- Progress in Steelmaking—New Source for Iron Ore 88
- Heavy Loads Handled Easily—Lift truck carries 26,000 lb 92
- Machine Topics—New Line Features Variety 95
- Honeycomb Scrap Upgraded—Silver removed from stainless 96
- ☑ Consider Low-Cost Automation—You can tailor standard units .. 98

Markets— MARKET OUTLOOK 111

- Complete Index to Market News and Prices 111
- ☑ More Use for Aluminum Coated Steel 113
- July Steel Shipments Drop—Monthly AISI report 115
- Steelwork Operation Chart and District Ingot Rates 120
- Steel Production Gains in August 120
- Scrap Rises Despite Slow Demand 134
- Nonferrous Metals—Metal Sales Improve 138

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

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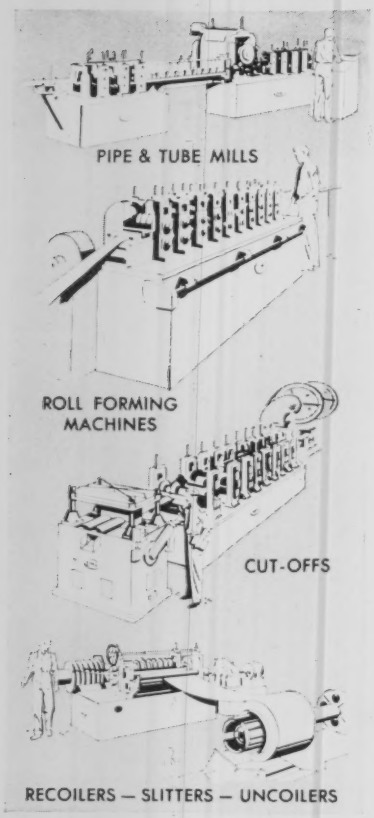

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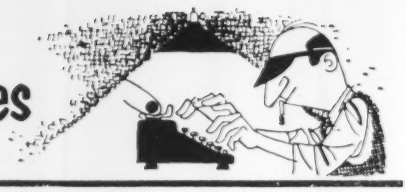
behind the scenes



Building Marketing Men

"In today's economy," said the portly gentleman, bellying up to the bar, "a good marketing man is something like a good quarterback. He combines leadership and administrative qualifications to integrate a variety of functions." He sipped his beverage deliberately (beverage suggests stuff like mint tea, or warm milk, and therefore the use of the term helps remove the suspicion that we are in the pay of the liquor interests) and added, "and quarterbacks don't grow on bushes, you know."

"How can you be so sure?" inquired a cross-eyed man whom everybody addressed as Freddie, because his name was really Fred. "My grandfather's brother-in-law was a man named Busch, and he was a hunchback—had only about a quarter of a regular back—so there was a case of a quarterback growing on a Busch."

When this bit of syllogistic reasoning was revealed to Copy Editor Harry Chandler, the big fellow submitted that Freddie might have had a point in the case of the quarterback. "However," concluded the pundit of the blue pencil, "about finding able marketmen, that's another story; as a matter of fact, it's a story that begins on Page 69 of this week's STEEL. To further identify it, it's called 'Building Marketing Men.' It's a Program for Management feature.

We inquired why he knew so much about it.

"I wrote it," Harry explained. "It's all about building men who can integrate the functions of sales, product development, market research, advertising, public relations, and so forth. You see, a man who can develop people to carry out these functions, and supervise their activities, is a valuable asset to any business organization."

The article contains a bibliography on material relating to the training of integrated marketing men, and we hope that nobody will take offense when we say that it is an exceptionally colorful feature.

Steel for Highways

About 100 years ago, travelers in Ohio agreed that the best way to travel was to stay at home. Public roads in the state were so bad that distinguished visitors, instead of observing the state of Ohio, observed nothing but the state of the roads. In journal after journal we come across dismal accounts of frightful journeys through Buckeye gumbo. The flow of invective the roads inspired has seldom been matched on the North American continent.

The trip overland from Lake Erie to the Ohio River by a wheeled vehicle was a waking nightmare. Once upon a time, a coach loaded with bruised passengers pulled out of a muddy trench and rolled onto a toll road, a planked highway. Every other plank had sunk into the mud, and the ride resembled a trip over railroad ties. The enraged passengers piled out, ran back and destroyed the toll gate, and set fire to the toll house. They said trans-Ohio roads had gone from impossible to hopeless.

The foregoing was inspired by a news release from the R. C. Mahon Co., Detroit. The Mahon people disclosed that they had been awarded contracts totaling $3,349,000 by individual contractors to engineer and fabricate 33 structural steel bridges for Ohio's North-South Turnpike. The bridges will carry traffic over rivers and existing highways.

Wouldn't it be wonderful if those toll house wreckers could be rolled across the state next year over those bridges. Imagine the incredulous stares, the breathless comments, the rapturous sighs. Ah, well, we're living in a marvelous age, so don't be ashamed to be incredulous, breathless, and rapturous over today's technology.

Writers & Sunshine

Common courtesy requires that we should thank all our kind correspondents: We have room today to mention gay Charlsie and Gang at General Steel Castings Corp., Granite City, Ill.; C. B. Smith, Portland Copper & Tank Works Inc., South Portland, Maine; H. C. Shagaloff, Servel Inc., Evansville, Ind.; Jack Welsh, Allegheny Ludlum Steel Corp., Brackenridge, Pa.; J. E. D. McCarty, Blue Crown Spark Plug Corp., Defiance, Ohio; Lillian A. Eiser, Topp Mfg. Co., Los Angeles, a division of Topp Industries Inc.; George H. Bierman, American Can Co., Bloomfield, N. J.; H. L. Wise and R. D. Sulzer, General Electric Co., Ft. Wayne, Ind.; S. Feigenbaum, Jones & Laughlin Steel Corp., Pittsburgh.

This is not a puzzle; it is simply a bit of trig to give us an excuse to introduce our newest state, Alaska. Up in Fairbanks, Alas. (that's how Webster abbreviates it!), the latitude is 64°51′ N. So what, pray tell, are the lengths of the longest and shortest days up there, and what is the bearing of the sun at sunrise on each of these days?

Shrdlu

(Metalworking Outlook—Page 31)

Finishing operations *on sink tops fabricated from Youngstown Porcelain Enameling Drawing Quality Steel Sheets are handled on an assembly line basis prior to porcelain enameling.*

Accent on Excellence

Youngstown cold-rolled steel sheets

Today's homemaker demands a kitchen that combines convenience, style and durability—qualities found only in a *steel* kitchen.

These smartly designed, functional units by Youngstown Kitchens Division of American-Standard will not warp or split, are vermin-proof, quiet operating, and finished in baked-on enamel in warm, long-lasting colors. Quality control standards require commercial quality cold-rolled sheets like that produced by Youngstown Sheet and Tube Company. This quality-controlled steel provides: Increased Production—Fewer Rejects—Accurate, Fast Forming—Reduced Fabrication and Die Costs.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

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THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

Republic Steel Announces Result of Project 501...

A NEW HIGH STRENGTH POWDER

Type 6460 Developed for Use in Higher Stressed Applications! Suited to Existing Operating Equipment! Provides High Strength With Lower Cost!

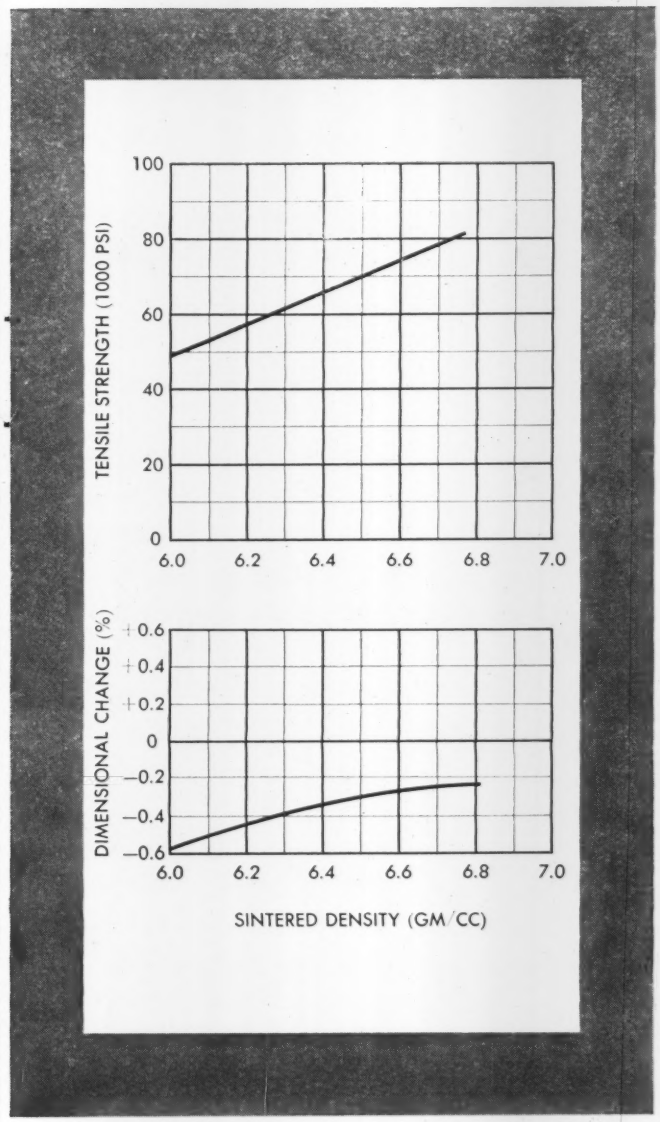
Again, the big news in the powder metallurgy industry comes from Republic Steel. First, Republic gave the industry powders with controlled dimensions. Now, at its Toledo, Ohio plant, Republic has developed, tested, and is *producing* a new **H**igh **S**trength Powder which permits the use of sinterings for highly stressed parts.

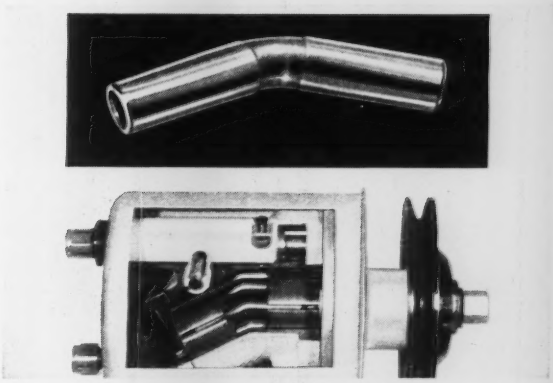
This new powder, designated Republic Type 6460, provides these advantages and features:

- Minimum tensile strengths at 6.4 density of 60,000 p.s.i. as sintered, and 100,000 p.s.i. heat treated, as determined on standard MPA Test Bar.
- *Can be used with existing operating equipment.*
- Normal briquetting pressures—30 to 35 tons to obtain a density of 6.4 grams/cc.
- Normal sintering cycles—2030°F. to 2050°F.—45 minutes—Endo Atmosphere.
- Normal heat treat procedures—additional information to obtain higher physical properties available upon request.
- Dimensional characteristics after sintering acceptable by commercial practices indicated by the industry—less than .004 inches per inch shrinkage from die size at 6.4 density.
- Available in *production quantities* up to and including 12 tons, or in multiples thereof.

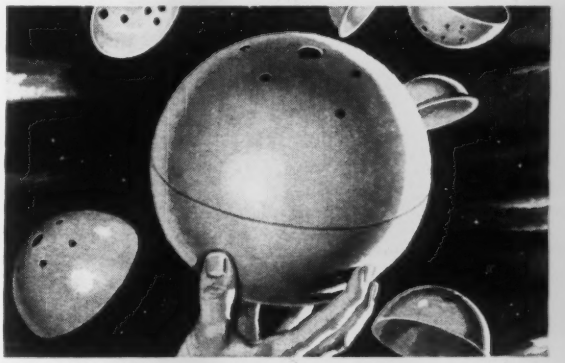
Republic Type 6460 Powder represents an entirely new, but thoroughly practical material for the powder metallurgy industry. It opens the way to new markets for new applications of **H**igher **S**tressed parts at lower costs.

Our metallurgists and engineers are ready to help you utilize all the advantages of Republic Type 6460 Powder. Just mail the coupon to obtain their services, or for technical data sheet on Type 6460 Powder.





WHEN IT'S MOVING... MAKE IT TUBING. Republic ELECTRUNITE Mechanical Tubing meets all close tolerance requirements for new Thompson Products automotive hydraulic pump assembly. Close tolerance, uniformity, ductility, workability—four important performance requirements, all important reasons why ELECTRUNITE is used. Will-O-Hill Industries, Inc. Willoughby, Ohio, sub-contractor, cut 7/16-inch diameter ELECTRUNITE into units 2 3/16 inches long. Each unit is rolled to form a slight groove in the center and bent to an angle of exactly 150°. Nine such pieces are used in each pump assembly. Send coupon for more information.



STRENGTH, LIGHTWEIGHT, CORROSION-RESISTANCE are advantages of Republic Titanium used in the manufacture of these hemispheres by Alloy Products Corporation, Waukesha, Wisconsin. Used for special aeronautical applications, completed spheres provide light weight without impairing safety; strength to contain 2,000 psi.; extremely high corrosion-resistance to chemically active contents. Beyond providing product advantages, Republic Titanium is easy to draw, pierce, and weld. Little change in fabricating procedure is required as compared with other construction materials. Send coupon for data.

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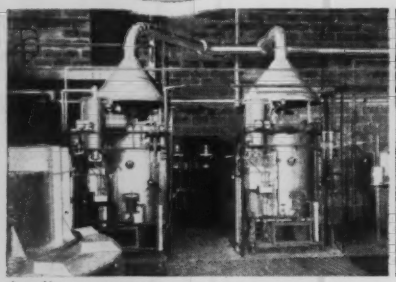
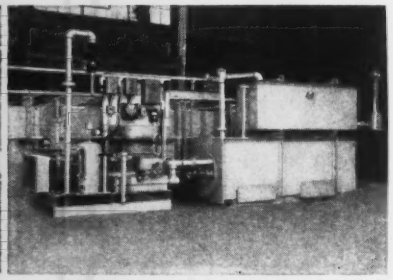
FURNACES *and* *Special Atmosphere* equipment



An efficient, low cost installation consisting of two small EF oil fired endothermic gas generators for producing special protective atmospheres from propane for carburizing and other processes.

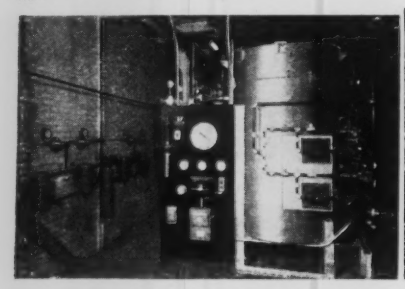


An EF kerosene exothermic gas generator, built in sizes and types for producing atmospheres for bright annealing copper and steel products in areas where fuel gases are not available.

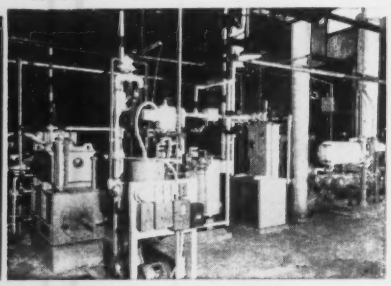
EF engineers pioneered the development and use of endothermic, exothermic and other low cost special atmosphere treatments for bright annealing ferrous and non-ferrous strip, tubing, wire and other products; for scale-free hardening, carbon restoration, decarburizing and other treatments. Get the exact surface characteristics you want, with unvarying uniformity day after day, by specifying EF special atmosphere equipment.

The complete line includes endothermic and exothermic generators, ammonia dissociators, refrigerators, dryers, desulphurizers, gas scrubbing units, CO_2 removal units and other needed equipment. Designed and ruggedly built for efficient, low cost operation. Automatically controlled. Proven in exacting service on hundreds of installations. Sizes for any capacity. For the utmost in efficient, low cost operation, submit your special atmosphere and furnace requirements to EF's experienced engineers—it pays.

EF Ammonia Dissociators are built in many sizes and types for producing highly reducing atmospheres as required for bright annealing stainless; and other processes and preventing decarburization.



EF special atmosphere equipment consisting of an exothermic generator, CO_2 removal unit, a refrigerator type dehydrator, and a dryer for producing a dry, high nitrogen gas with low H_2 content.



EF

BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

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LETTERS TO THE EDITORS

Pictures Lack Safety Message

In your Aug. 18 issue are two pictures which could convey the ever necessary safety message, but they don't.

The operator pictured in your article, "Metals Vie for Plate Sales" (Page 47), does not have safety glasses and, if his left hand retains the grip on the plate, his fingers will be reshaped.

The picture in the Bethlehem Steel Co. ad on Page 1 (which covers spiral conduit winding) shows the operator on this hazardous operation without safety glasses.

K. M. Bowlby
Mack Trucks Inc.
Plainfield, N. J.

Lauds Market Survey Article

Please send three reprints of your article, "Surveying the Market" (Aug. 18, Page 85). It is one of the best I have read covering the subject of market surveys.

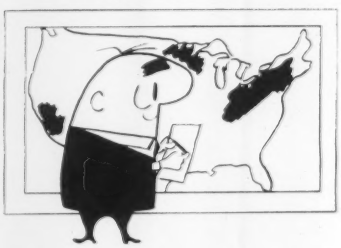
Edward J. Querner
Vice President-Engineering
Fischer & Porter Co.
Hatboro, Pa.

• • •

I would appreciate a personal copy of this extremely informative and instructive article.

Kenton Chickering
General Sales Staff Manager
Oil Well Supply Div.
United States Steel Corp.
Dallas

U. S. Mapped for Corrosion



Your article, "Sulfuric Acid in the Air" (Sept. 1, Page 37), is one which should prove of interest to a number of individuals connected with this firm. We would like to obtain eight copies.

A. J. van Goylen
Bekaert Steel Wire Corp.
New York

• • •

Please send me a copy of the article showing a corrosion map of the U. S.

E. A. Miller
Vice President-Engineering
Acme Electric Corp.
Cuba, N. Y.

Comprehensive Articles

Kindly mail two copies of each of the Program for Management articles, No. 1 through 7. These are among the most

Finish obtained in machining REX M-2-S eliminates the need for finish grinding this 4" x 4" unground double thread cutting hob.

Hobs seldom need finish grinding when made of low cost REX M-2-S

This is the actual finish obtained—without costly finish grinding—with REX M-2-S,® Crucible's *sulfur-bearing,* tungsten-molybdenum type high speed steel. The chemistry of this resulfurized steel readily provides the machinability needed for the final, critical "backing-off" operation in making hobs. It doesn't tend to tear or produce rough finishes—as nonsulfur-bearing steels of this type so often do.

REX M-2-S costs about 30% less than T-1 type, too, because it's lower priced per pound, and provides 5.4% more linear feet per pound.

Crucible REX M-2-S is also equal in red hardness to the T-1 type, and even more resistant to abrasion. It's also tougher than any other tungsten type high speed steels, and hardenable over a wider range than any other molybdenum high speed steels.

Qualities like these make REX M-2-S extremely suitable (and economical) for broaches, chasers, lathe tools, reamers, taps and hobs as well as other tools normally requiring high speed steel.

For further information, just ask for details on REX M-2-S—or all the Crucible high speed steels today. Write: *Crucible Steel Company of America. Dept. T115, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

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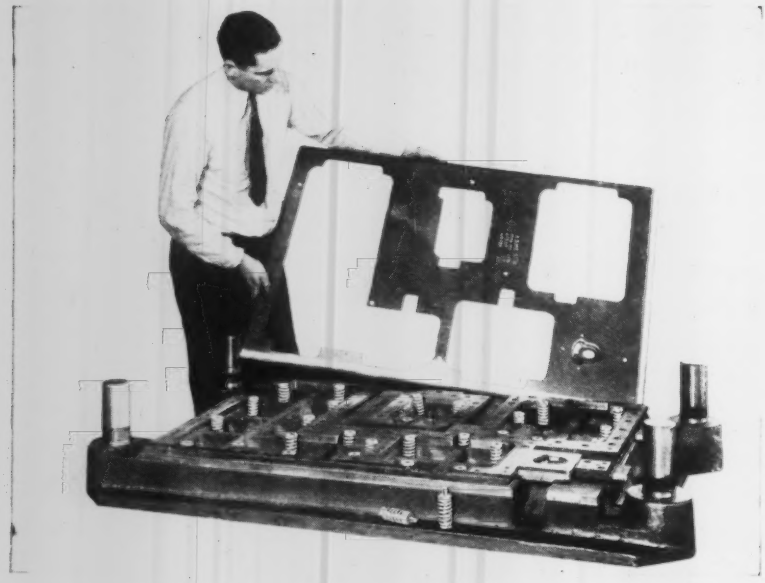

the **STRIPPIT** that gave us our name... brings you

lower tooling costs!

A REVOLUTION IN DIE-MAKING. The famous "Strippit," invented by Wales Strippit Company, saves tool engineers and die-makers endless hours of designing and building stripping mechanism into die sets. These compact, telescoping spring-and-retainer units provide standardized stripping pressures for uniform stripping of blanks from dies. Strippits eliminate spring grinding . . . stripper bolts . . . drilling and counterboring for stripper bolts . . . boring spring pockets . . . permit use of thinner, easier-to-machine stripper plates . . . eliminate turning over the punch holder and die shoe castings after the back sides have been planed. Strippits pay for themselves many times over on every job.

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Strippit self-contained hole punching and notching units, provide the most economical way to notch up to ⅛" mild steel and punch flats, structurals and extrusions up to ¾" mild steel. These units are quickly set up in any pattern, placed in the press without loss of press time and actuated by the ram. Interchangeable standard or special tools . . . fast setup changes . . . re-usability of all units . . . give you high production plus flexibility for quick, economical design changes. Write today for complete engineering details and if you desire, a demonstration by a Strippit mobile unit at your plant. No obligation, of course.

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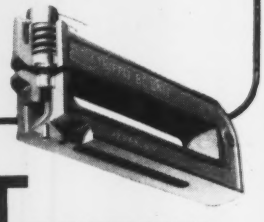

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210 Buell Road, Akron, New York

Manufactured in Canada by Strippit Tool and Machine Limited, Brampton, Ontario

LETTERS

(Concluded from Page 10)

comprehensive articles on the topic I have seen, and you are to be congratulated for this service.

Peter G. Arnovick
Market Analyst
Sterling Electric Motors Inc.
Los Angeles

• • •

I want to compliment you on your Program for Management series, especially the recent ones which stressed market research.

There is a real need for outstanding market research on technical and engineering products which involve either finding new uses for an existing product or uses for new products such as pumps, bearings, valves, and clutches.

Fred M. Potgieter
Fred M. Potgieter & Associates
Rockford, Ill.

Metal Shaping by Explosives

I would greatly appreciate a copy of your article, "Explosives Form Space Age Shapes" (Aug. 25, Page 82).

James F. Rushing
Manager
Product & Market Research Dept.
Structural Products Div.
Ceco Steel Products Corp.
Chicago

• • •

Please send a copy.

C. J. Orciuch
Metallurgical Manager
Wyman-Gordon Co.
Worcester, Mass.

• • •

Please send five reprints.

W. F. Casey
President
Stainless & Steel Products Co.
St. Paul

Carburizing Decreases Costs

Please forward two reprints of the article, "High Temperature Carburizing Is Practical" (Aug. 4, Page 98).

S. P. Robertson
Chief Industrial Engineer
Reed Roller Bit Co.
Houston

Scientific Approach to Problem

We noted with interest the article, "Stalemated? Try This Move" (June 30, Page 60). We would appreciate a copy.

D. R. Herzog
Marketing Services
Solar Aircraft Co.
San Diego, Calif.

Reprints To Train Foremen

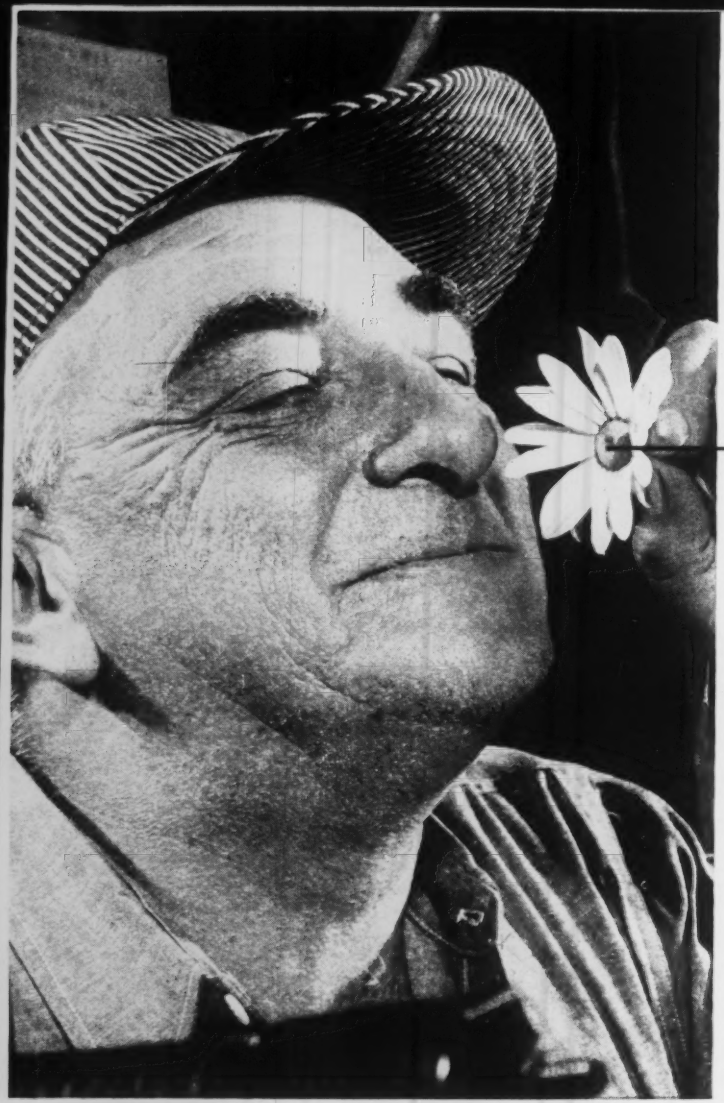
We would appreciate 50 copies of the article, "How To Pick and Train Foremen" (Sept. 1, Page 32). They will be used in our foreman training program.

R. S. Worth
Manufacturing Manager
Wire Mills Div.
John A. Roebling's Sons Corp.
Subsidiary of Colorado Fuel & Iron Corp.
Trenton, N. J.

DISCOVERED!

...new way to keep cutting fluids as fresh as a daisy!

SEE NEXT TWO PAGES



DISCOVERED...A NEW WAY TO KEEP COOLANTS FRESH AS A DAISY!

Shop tests show ELCIDE 75 keeps cutting fluids fresh longer than ever before

Now . . . there's a new and better way to control the harmful bacteria that cause oil-water emulsion breakdown, acidic corrosion, and rancid odor. It's Elcide 75 . . . a product directly related to one of the most powerful bacteria killers used in medical science today . . . a material that has proved itself in the exacting field of surgical practice and has now been adapted to solve the problem of bacterial growth in soluble oil emulsions.

A large Midwestern manufacturing plant tested Elcide 75 under actual job conditions.

They found that one ounce of Elcide 75 added to each 4 gallons of oil-water emulsion . . .

extended useful life of the emulsion 5½ times . . .

greatly reduced cutting oil requirements . . .

delayed odor and emulsion break for 22 weeks, while untreated machines had to be dumped at the end of four weeks . . .

proportionately reduced down time for recharging . . .

was safe and nontoxic . . .

eliminated bacterial slime and reduced acidic corrosion . . .

drastically reduced their disposal problems.

WHAT ELCIDE 75 CAN DO FOR YOU

This combination of inhibitors can extend the life of your oil-water emulsions 2 to 4 times, or more, and can dramatically cut your oil-concentrate purchases. At the same time, production will increase because you have less down time for recharging.

ELI LILLY AND COMPANY · AGRICULTURAL AND INDUSTRIAL PRODUCTS DIVISION
INDIANAPOLIS 6, INDIANA
TELEPHONE: MELROSE 6-2211

This is one of the causes of emulsion trouble. These are *Pseudomonads*, one of the many harmful types of bacteria found in oil-water emulsions. These, and other bacteria, enter emulsions through the air, water, and plant debris. They set the stage for a chain reaction which causes odor, corrosion, and costly emulsion breakdown.

Prior to Elcide 75, no single inhibitor was able to control the full range of bacterial growth. Certain of these bacteria quickly develop resistance to single inhibitors and continue to flourish. Now, Elcide 75 controls a wider range of bacteria because it is an effective combination of bactericidal agents. This has been proved in shop tests.

In certain areas where waste-oil disposal is a problem, the use of Elcide 75 proportionately reduces the size of the problem.

Elcide 75 also contributes to better products and longer machine-tool life. Bacterial contamination causes acidic decomposition of the emulsion and sets up conditions for corrosion. By controlling the bacteria, you eliminate this source of trouble.

Employees like Elcide 75 because, when added to the emulsion, it is completely safe. In another recent test involving over 1000 machines, it was shown that Elcide 75 was safe, nontoxic, and harmless to sensitive skin. It also reduces the chance for bacterial infection caused by contaminated emulsion.

YOU KNOW WHAT YOU GET WHEN YOU BUY ELCIDE 75

With Elcide 75, you know you have the proper amount for effective treatment because you add it to your emulsions right in your plant. The standard recommendation is one ounce of Elcide 75 per 4 gallons of oil-water emulsion.

PROVE IT TO YOURSELF... TRY ELCIDE 75 IN YOUR PLANT

The best way to determine the value of Elcide 75 is to try it under your normal plant conditions, using your regular oil-water emulsion. After you've had an opportunity to compare results, we believe you'll agree that Elcide 75 is a valuable discovery that will greatly increase your plant efficiency.

PRODUCT SPECIFICATIONS ELCIDE 75

(Lilly's brand of bactericide for cutting fluids)

Active Ingredients—Thimerosal (Sodium Ethylmercuri Thiosalicylate) and Sodium o-phenylphenate.

Package	Price per Gal.
1-gallon polyethylene . . .	$8.50
5-gallon polyethylene . . .	$8.00
55-gallon stainless steel . . .	$6.50

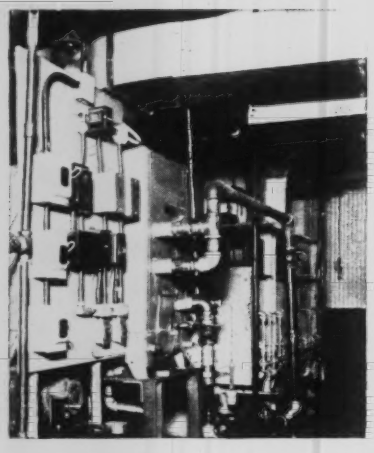
Terms: 1%, 10th prox.; net, 30th prox. F.O.B. Indianapolis. Transportation paid via carrier of our selection.

For further information or to place your order, phone or write.

ELCIDE 75™

PATENT PENDING

Lilly



Improve Quenching and You Get Better Heat Treating

● The NIAGARA *Aero* HEAT EXCHANGER transfers the heat from the quench bath to atmospheric air. It never fails to remove the heat at the rate of input, giving you real control of the quench bath temperature. This prevents flashing of oil quenches. In all cases it improves physical properties, saves loss of your product from rejections and gives you faster production, increasing your heat treating capacity. You can put heat back into the quench bath to save the losses of a "warm-up" period.

Savings in piping, pumping and power as well as great savings in cooling water return the cost of the equipment to you in a short time. The Niagara *Aero* Heat Exchanger saves nearly all of the water consumed by conventional cooling methods.

For the complete story of other benefits and savings, write for Bulletins 120 and 132.

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HP RANGE:
½ to 50 hp

RATIOS:
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OUTPUT SPEED RANGE:
420 to 5 rpm

TORQUE RATINGS:
up to 31,500 lb-in

FALK ALL STEEL Shaft Mounted Drive

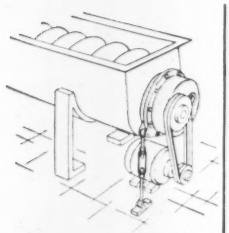
. . . Steel can "take it"!

STEEL frame . . . of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

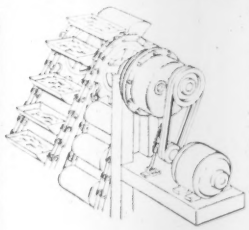
STEEL housing . . . will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

STEEL tie-rod and straddle-mounted tie rod brackets . . . are fastened to heavy steel frame by steel bolts in double shear.

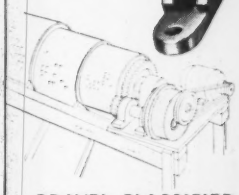
A FEW TYPICAL APPLICATIONS



SCREW CONVEYOR



BUCKET ELEVATOR



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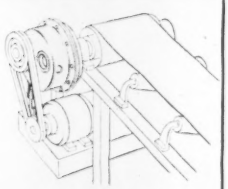
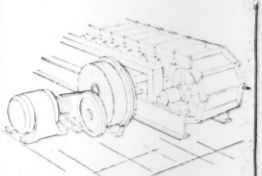
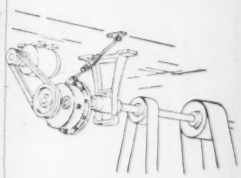


BELT CONVEYOR



APRON FEEDER



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Off-the-shelf delivery from your Authorized Falk Distributor. *Shipment from factory or warehouse stocks* within 72 hours after receipt of your order.

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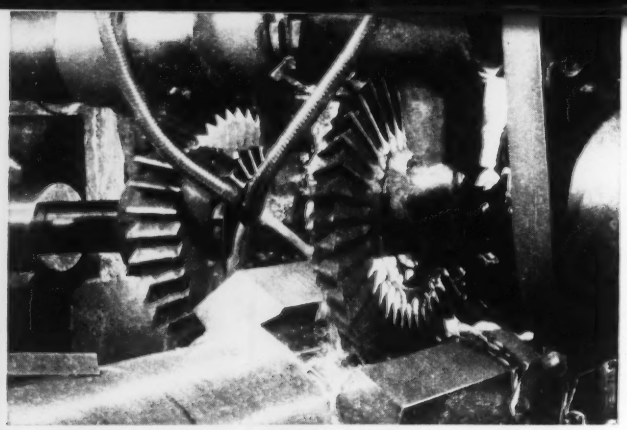
Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

FALK

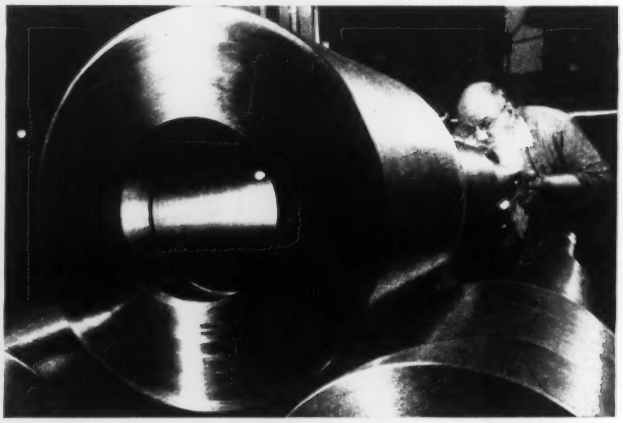
. . . a good name in industry

SAVES $150 PER GEAR—In cutting a double-web design fabricated gear on a gear generator, tool cost formerly averaged $180 per gear. By switching to ALCO Hi-Qua-Led Steel with its lower friction component, tool wear is reduced, and manufacturer reports savings of approximately $150 per gear.



MILLING TIME DOWN 71%—Hi-Qua-Led Steel open-die forgings enabled a machine tool builder to reduce time for straddle-mill dovetailing of pentagon shape by 71%. Overall time for piece, including milling, turning and trepanning, is cut 33%, and a significant saving in tools is also noted.

IMPROVED FINISH—A manufacturer reports a much smoother gear finish with ALCO Hi-Qua-Led Steel. There is a complete lack of burrs which formerly required extensive hand filing to remove. In addition, time for this cutting operation on a Fellows gear shaper is reduced 47%, and tool wear is down 20%.

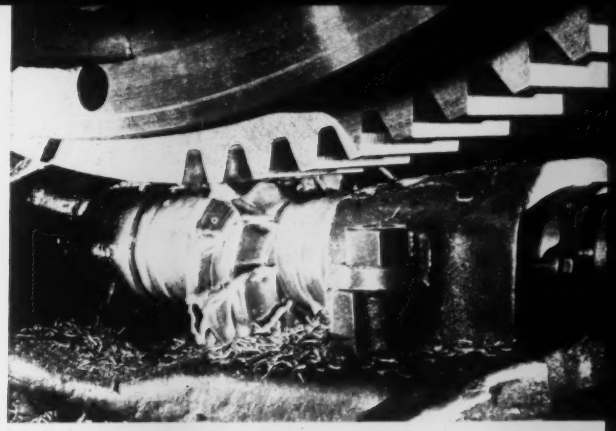


700% INCREASE IN TOOL LIFE—In trepanning a 4 in. diameter hole 42½ in. long with a Warner & Swasey lathe, tool life averaged one piece per tool. With Hi-Qua-Led, 8 pieces are now obtained with the same tool. Manufacturer reports that Hi-Qua-Led Steel also provides much better chip formation.

EASY-MACHINING HI-QUA-LED STEEL* FORGINGS GIVE INDUSTRY NEW OPPORTUNITY FOR PROFIT

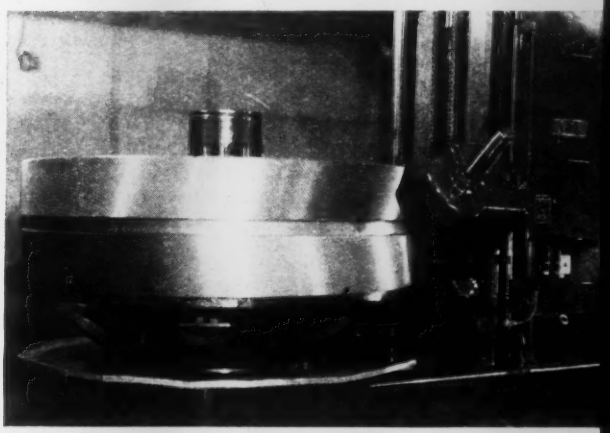
* **HI-QUA-LED STEEL**—ALCO's registered trademark for its new process leaded-steel forgings that are making outstanding reductions in tool wear, machining time and production costs.

TOOL DOES 3 TIMES THE WORK—With Hi-Qua-Led Steel, a King boring mill operation that once required 3.4 hours is off the machine in 43 minutes. Through the lower frictional properties of Hi-Qua-Led Steel, the manufacturer obtains 10 pieces per tool grind as compared to 3 pieces obtainable with non-leaded steel.



8-HOUR JOB DONE IN 3—Another manufacturer reports that roughing and finishing a gear required a total of 8 hours and 8 minutes on his gear cutter. With freer-machining Hi-Qua-Led Steel and the increased speeds and feeds it permits, the job is now completed in just 3 hours and 10 minutes.

FASTER SPEEDS, NORMAL TOOL WEAR—A gear manufacturer using a Fellows gear cutter was able to increase rough-cut speed 37% and finish-cut speed 111% with Hi-Qua-Led Steel. Smoother operation is noted, and the tremendous reduction in machine time is accomplished with only normal wear to cutter.



SAVES FULL WORK WEEK—Using gear blanks of ordinary steel, roughing and finishing on a Gould and Eberhardt machine previously required 65.1 hours. The improved machining qualities of Hi-Qua-Led Steel have speeded up gear production and the job is now completed in 24.9 hours, saving a 40-hour work week.

The easy machinability of ALCO's Hi-Qua-Led Steel® forgings is setting new production records and boosting profit throughout industry. While maintaining all the physical characteristics of regular steel in any AISI grade, forgings of Hi-Qua-Led Steel, ALCO's special process leaded steel, provide the extra benefits of greatly reduced machine time, longer tool life and improved surface finish. In addition, the reduced friction component of Hi-Qua-Led Steel forgings assures much closer tolerances.

By switching to ALCO's Hi-Qua-Led Steel forgings in your operation, you can cut your machining costs drastically. Along with this reduction in costs, Hi-Qua-Led Steel forgings will provide the same service in your end product as you obtain with regular forgings.

ALCO specialists are available to show you—on your own machines, in your own plant—how Hi-Qua-Led Steel forgings will boost your profit. Forgings are available in seamless rolled circular shapes from 18 to 145 in. OD, in open-die shapes from 1,000 to 30,000 lb and 40 ft long, and in mandrelled seamless circular shapes up to 60 in. wide. Contact the ALCO sales office nearest you for complete details. For a booklet containing technical information on Hi-Qua-Led Steel forgings, write ALCO Products, Inc., Dept. 153, Schenectady 5, New York.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

SALES OFFICES IN PRINCIPAL CITIES

LOCOMOTIVES · DIESEL ENGINES · NUCLEAR REACTORS · SPRINGS · STEEL PIPE · FORGINGS · OIL-FIELD EQUIPMENT

A Report on the

Ten basic attributes that can help you satisfy both design and production needs.

The properties of copper alloys are a handbook in themselves. No group of metals is more versatile. Here are electrical, thermal, structural, chemical and finish properties that are unique. Here are metals that can be shaped and joined by almost every known method.

There are over 40 standard alloys of copper. And each has its own set of specifications, its own combination of properties. Finding the one that best matches *your* specifications is the problem. And the answers to that problem keep changing. Copper industry research into new alloys and new forming and preforming methods gives designers a latitude today that challenges both their imagination and their ability to keep posted. Today we must assume that some copper alloy *can* do the job.

Here are just ten of the more important design requirements that point to the selection of a copper alloy:

1.

Electrical Conductivity. The various types of commercially pure copper have long been the most economic conductors. Now, copper-chromium and copper-cadmium alloys have improved mechanical properties along with high conductivity. And silver-bearing coppers with as good conductivity as commercially pure copper have a higher softening temperature for certain applications involving high temperatures.

2.

Thermal Conductivity. Since many of the low-zinc brasses, as well as copper itself, offer outstanding heat transfer rates, selection usually depends on the other properties desired — corrosion resistance, hot strength, ductility, etc.

3.

Corrosion Resistance. Every corrosion problem is different — and there's a copper alloy to meet most: for chemical applications, heat exchangers, processing equipment, refrigeration apparatus, etc.

4.

Strength. The high-zinc brasses, nickel silvers, beryllium copper, the silicon bronzes and the phosphor bronzes can be processed to provide tensile strengths of the order of 140,000 psi for hard-drawn wire.

Copper Metals

5.

Ductility. The ductility of most copper alloys permits forming them into a wide variety of shapes and sizes, by spinning, stamping, deep-drawing, etc. For example, the coppers, most brasses and nickel silvers are ideal for cold forming.

6.

Malleability. Pure copper and many of its alloys have excellent malleability for forging, cold heading, coining, embossing, extruding, knurling, swaging, etc.

7.

Machinability. Free-Cutting Brass, tellurium copper, some of the bronzes and the leaded brasses are readily machinable at high speeds and feeds.

8.

Joining Qualities. Copper and most copper alloys can be easily soldered — or, for even stronger joints, brazed with either silver alloys or copper phosphorus alloy. The non-leaded brasses, phosphor bronzes, silicon bronzes and cupro-nickels as well as deoxidized copper also lend themselves readily to welding by a number of processes.

9.

Surface Qualities. The nickel silvers and low-zinc brasses are widely used in ornamental applications because of their ease of plating and finishing as well as their cold-working properties. New fine-grain brasses offer an ideal surface structure for high finish.

10.

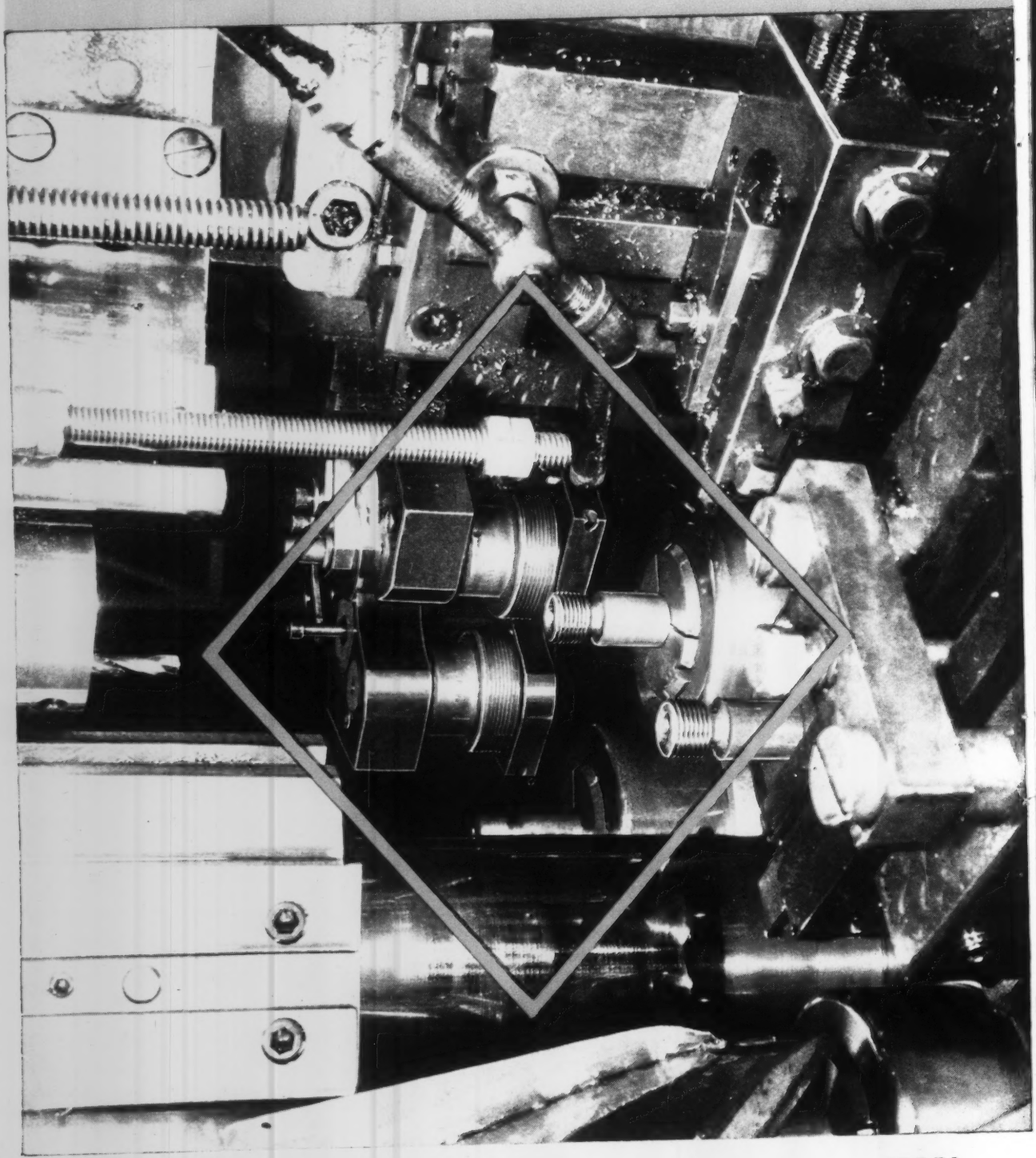
Casting Facility. There are eight basic categories of casting alloys, ranging from the hard, but very strong, manganese bronzes to the free-machining leaded bronzes.

The combination of properties that you need for the best product and the optimum manufacturing cost can probably be found among the copper metals. The copper industry will help you find it. The Copper & Brass Research Association, 420 Lexington Avenue, New York 17, New York, will welcome your inquiry.

There's a new frontier in...

COPPER
BRASS
BRONZE

1/2" taper pipe thread



rolled with the LANROLL attachment

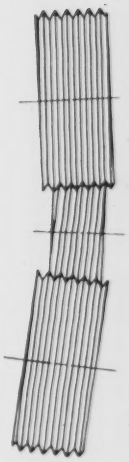
The recently developed LANDIS Method for precision rolling of taper pipe threads is shown at the Mac-It Parts Company, Lancaster, Pennsylvania, in the production of pipe plugs.

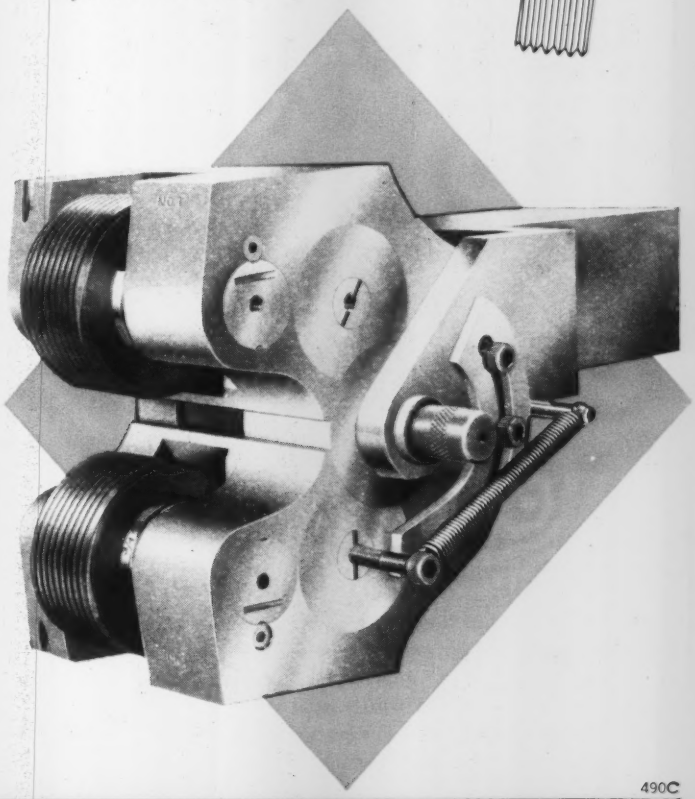
1/2" 14 pitch American Standard Taper Pipe threads are being rolled 9/16" long to dry seal specifications on 4140 steel (207 Brinnell). The #22GA LANROLL Attachment (with a pipe range of 1/8" to 1") is used in the third position on a National Acme Bar Automatic —45,000 pieces are threaded with each set of rolls.

To produce the taper, the rolls of the LANROLL Attachment are supported on carbide shafts inclined to the required thread taper. This design enables the use of parallel rolls (see diagram) which reduces slippage between the workpiece and rolls. With reduced slippage, roll life is materially increased. In addition, attachment stabilization (limited sidewise movement) is greatly improved to permit rolling directly to a shoulder with safety.

A highly desirable design feature of the LANROLL Attachment is the ability to remove the attachment from the shank by simply withdrawing the shank pin. By this means, machine tooling changes or attachment servicing can be accomplished without disturbing the original set up. This same construction facilitates, through the use of a gage, a precision, safe means for locating the attachment on the tool slide in respect to the high point of the machine's feed cam. Also, it allows attachment tipping to avoid indexing interference on screw machines having a limited tool slide movement. The same LANROLL Attachment will produce either straight or taper threads by using the proper rolls and an important but limited amount of auxiliary equipment. They provide wide range coverage while retaining the rigidity of a non-adjustable tool—assuring operation for every size within its range as though it were exclusively engineered for the particular work being threaded.

For complete information on the LANDIS Method of rolling taper threads and other outstanding design principles, please write and request Bulletin G-96.





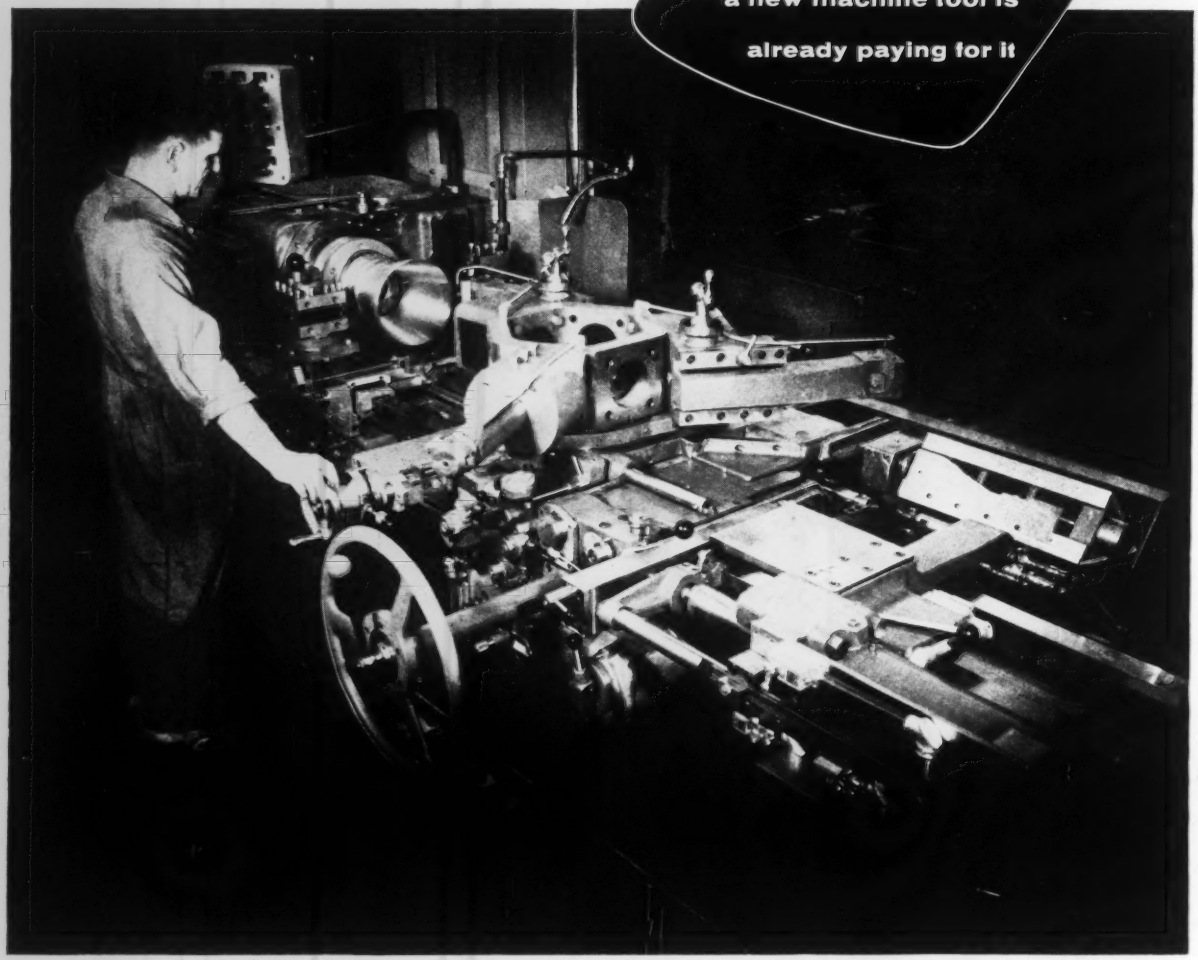
490C

LANDIS Machine COMPANY

WAYNESBORO • PENNSYLVANIA • U. S. A.

JONES & LAMSON MACHINE TOOLS

the man who needs a new machine tool is already paying for it



Out-of-this-World Accuracy

Whether they're destined to go "out of this world" or not, many jobs demand some "out of this world" machining. Here's one, on a J & L lathe which is adapted for two-way tracing from the hexagon turret. Critical dimensions on both internal and external tapers, plus several intricate contours are finish-machined in one chucking.

A three-way indexing template holder is push-button controlled. Thus, down-time for template changes is eliminated, and the 180° tracer continues to machine on both the forward and return feed of the saddle carriage.

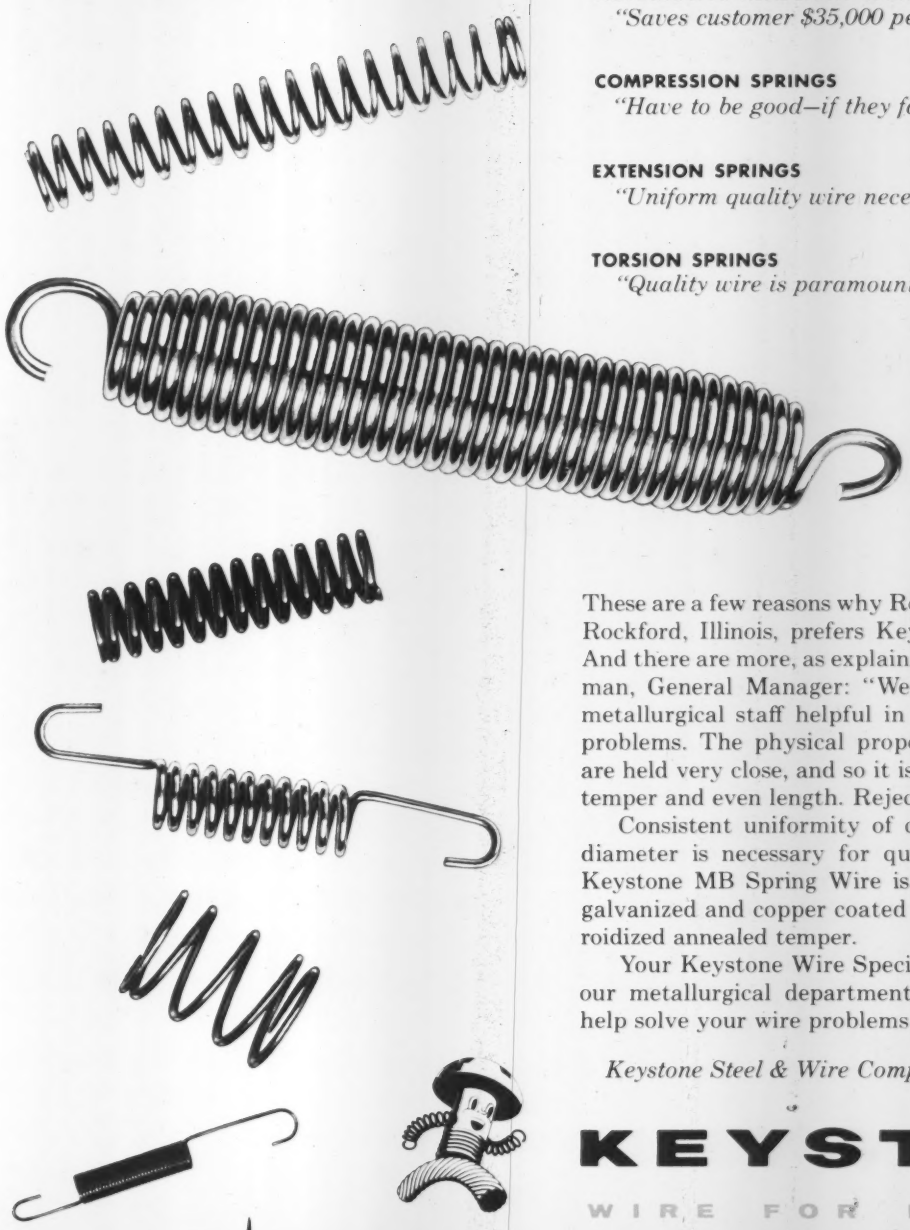
A single selector switch disengages the tracing unit and the machine is ready for normal* turret lathe operations.

*("Normal" for J & L turret lathes means unsurpassed accuracy, high production, and low, low maintenance.) For details, write for our descriptive folder No. 5425. Jones & Lamson Machine Company, 517 Clinton St., Springfield, Vermont.

Turret Lathes • Fay Automatic Lathes • Precision Boring Machines • Thread & Form Grinders • Optical Comparators • Thread Tools

KEYSTONE MB SPRING WIRE STUDY

KEYSTONE MB Spring Wire Quality pays off for ROCKFORD SPRING Company



AUTOMOTIVE HEADLIGHT SPRING
"Saves customer $35,000 per year"

COMPRESSION SPRINGS
"Have to be good—if they fail, engines fail"

EXTENSION SPRINGS
"Uniform quality wire necessary for quality springs"

TORSION SPRINGS
"Quality wire is paramount"

These are a few reasons why Rockford Spring Company, Rockford, Illinois, prefers Keystone MB Spring Wire. And there are more, as explained by Burdette R. Steadman, General Manager: "We have found Keystone's metallurgical staff helpful in working out our design problems. The physical properties of Keystone Wire are held very close, and so it is possible to achieve even temper and even length. Rejects are negligible."

Consistent uniformity of composition, temper and diameter is necessary for quality spring production. Keystone MB Spring Wire is also available in drawn galvanized and copper coated finishes, as well as spheroidized annealed temper.

Your Keystone Wire Specialist and the facilities of our metallurgical department are at your service to help solve your wire problems.

Keystone Steel & Wire Company, Peoria 7, Illinois

KEYSTONE

WIRE FOR INDUSTRY

Come to the show that keeps metals ON THE GO!

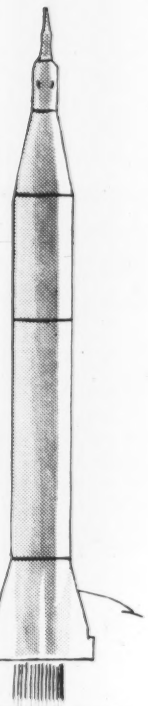
METAL SHOW

Metals Make It Better... For Less

CLEVELAND PUBLIC HALL

OCT·58

OCTOBER 27-31



Every year for 39 years the METAL SHOW has attracted throngs of men who stake their future on metals. They are the Metals Engineers, Designers, Administrators, Production Chiefs concerned with the conversion of metals to profits, a feat that calls for particular technical alertness and adaptability in today's ever-changing metal market.

Greater design challenges, intensified competition, and increasing costs create the background against which astounding new ideas will be revealed this year in Cleveland's Public Hall, October 27 to 31... problem-solving hints presented by hundreds of exhibits and technical sessions unfolding new materials, processes, techniques, and finishes.

A visit to the METAL SHOW dissolves mental cobwebs, offers a fresh outlook, stimulates ideas, blends your thinking into an all-metals atmosphere technically slanted to solve your problems.

Keep Metals on the go; **COME TO THE SHOW**

Metals Engineers come to you...

when you exhibit in the METAL SHOW. Demonstrate how to MAKE IT BETTER FOR LESS ...WITH METALS. Wire for exhibitors folder.

NATIONAL METAL CONGRESS and EXPOSITION

Owned and Operated by the **AMERICAN SOCIETY FOR METALS**

7301 Euclid Avenue • Cleveland 3, Ohio

Cooperating Activities: Institute of Metals Division ... Iron and Steel Division ... Extractive Metallurgy Division of the American Institute of Mining, Metallurgical and Petroleum Engineers... Society for Nondestructive Testing, Inc. Associations presenting technical sessions in cooperation with ASM: Industrial Heating Equipment Association; Metal Powder Industries Federation; Metal Treating Institute; Special Libraries Association, Metals Division; and the extensive programs of the American Society for Metals with the new Bill Woodside Memorial Sessions, and ASM Metallurgical Seminar.

The big boy sheds some weight...

...About three tons of it just came off in that lathe. For this "big boy" is a forty-ton plate mill roll—one of the largest made.

While no one here at Mack-Hemp was so blasé that he ignored this roll as it went through the shop, no one was overly impressed, either. Regardless of size, every roll that's poured here at Mack-Hemp receives the full measure of painstaking care—which is why *you get more tonnage from the rolls with the striped red wabblers.*

MACKINTOSH-HEMPHILL • Division of E. W. BLISS COMPANY
Pittsburgh and Midland, Pa.

Roebling Presents

THE NEWEST CONCEPT IN WIRE ROPE

*Herringbone**

two ropes in one!

Here is a combination that has proved itself during three years of field testing. A welcome addition to Roebling's great line of wire ropes, Royal Blue *Herringbone* is both a regular lay and lang lay wire rope!

So, in one rope you have the greater flexibility and abrasion resistance of lang lay construction *plus* regular lay's superior stability under severe operating conditions.

Preformed Herringbone is made of two *pairs* of lang lay strands, and two strands of regular lay which separate the two pairs of lang lay—all of it made of Type 1105 rope wire.

For three years Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. Without reservation, its performance has been superior to that of any other rope used for the same jobs . . . even in the hands of inexperienced personnel! *Its proven capabilities clearly suggest its use for all jobs where steel core ropes are normally used.*

See your Roebling salesman for all the facts or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. Roebling Herringbone, the two-in-one rope to meet the *doubly* stringent demands of today's economy.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

**Reg. app. for*

HERRINGBONE
WIRE ROPE

CALENDAR
OF MEETINGS

Sept. 22-23, Steel Founders' Society of America: Fall meeting, Homestead, Hot Springs, Va. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Executive vice president: F. Kermit Donaldson.

Sept. 22-24, American Management Association: Personnel conference, Statler Hilton Hotel, New York. Association's address: 1515 Broadway, New York 36, N. Y. President: Lawrence A. Appley.

Sept. 22-24, Material Handling Institute Inc.: Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1 Gateway Center, Pittsburgh 22, Pa. Managing director: L. West Shea.

Sept. 22-25, American Mining Congress: Metal mining and industrial minerals convention and exposition, Civic Auditorium, San Francisco. Congress' address: 1102 Ring Bldg., Washington 6, D. C. Executive vice president: Julian D. Conover.

Sept. 23-26, Association of Iron & Steel Engineers: Convention and exposition, Public Auditorium, Cleveland. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

Sept. 25-27, Porcelain Enamel Institute: Annual meeting, Greenbrier, White Sulphur Springs, W. Va. Institute's address: 1145 19th St. N.W., Washington 6, D. C. Managing director: John C. Oliver.

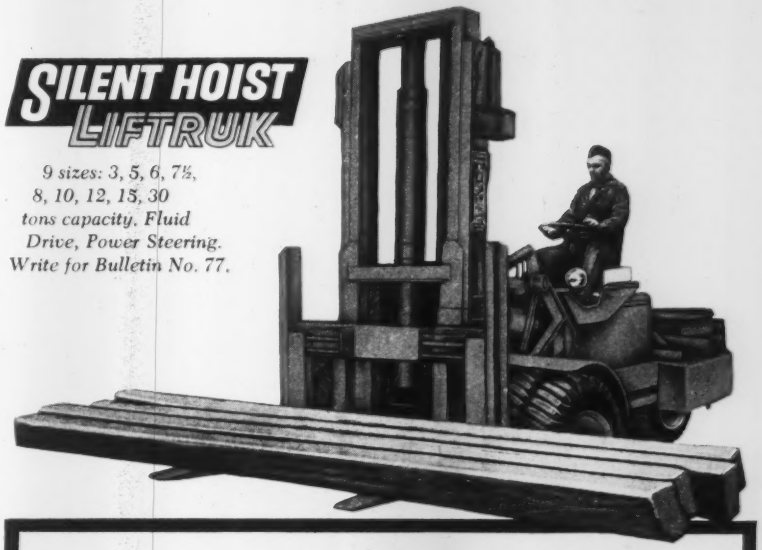
Sept. 28-Oct. 2, Electrochemical Society Inc.: Fall meeting, Chateau Laurier Hotel, Ottawa, Ont. Society's address: 1860 Broadway, New York 23, N. Y. Secretary: Henry B. Linford.

Sept. 28-Oct. 2, Pressed Metal Institute: Annual executives meeting, Cloister, Sea Island, Ga. Institute's address: 3673 Lee Rd., Cleveland 20, Ohio. Managing director: Harold Daschner.

Sept. 29-Oct. 1, American Society of Mechanical Engineers and American Institute of Electrical Engineers: National power conference, Statler-Hilton Hotel, Boston. Information: ASME, 29 W. 39th St., New York 18, N. Y.

Sept. 29-Oct. 3, American Society of Tool Engineers: Semiannual meeting and western tool show, Shrine Exposition Hall and Statler Hotel, Los Angeles. Society's address: 10700 Puritan Ave., Detroit 21, Mich. Executive secretary: Harry E. Conrad.

Sept. 29-Oct. 3, Society of Automotive Engineers: Aeronautic meeting and production forum and aircraft engineering display, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.



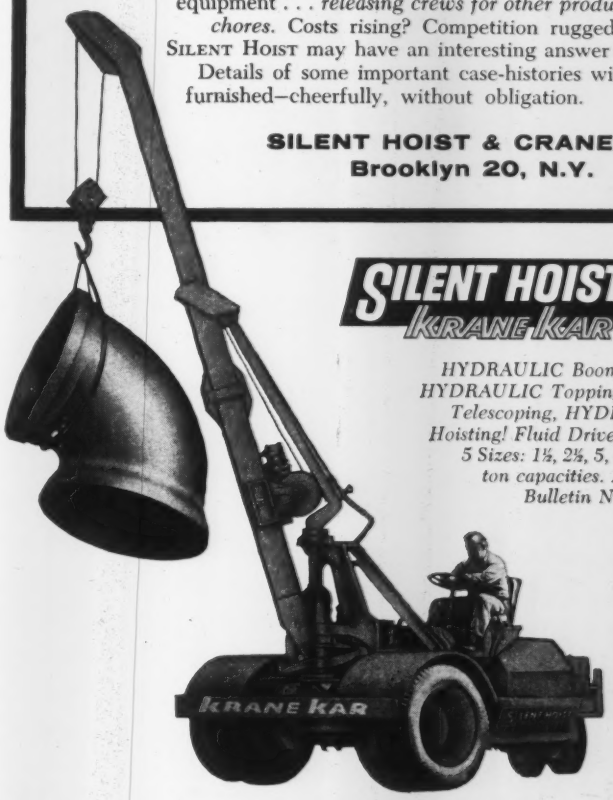
SILENT HOIST LIFTRUK

9 sizes: 3, 5, 6, 7½, 8, 10, 12, 15, 30 tons capacity. Fluid Drive, Power Steering. Write for Bulletin No. 77.

shrink days into hours...

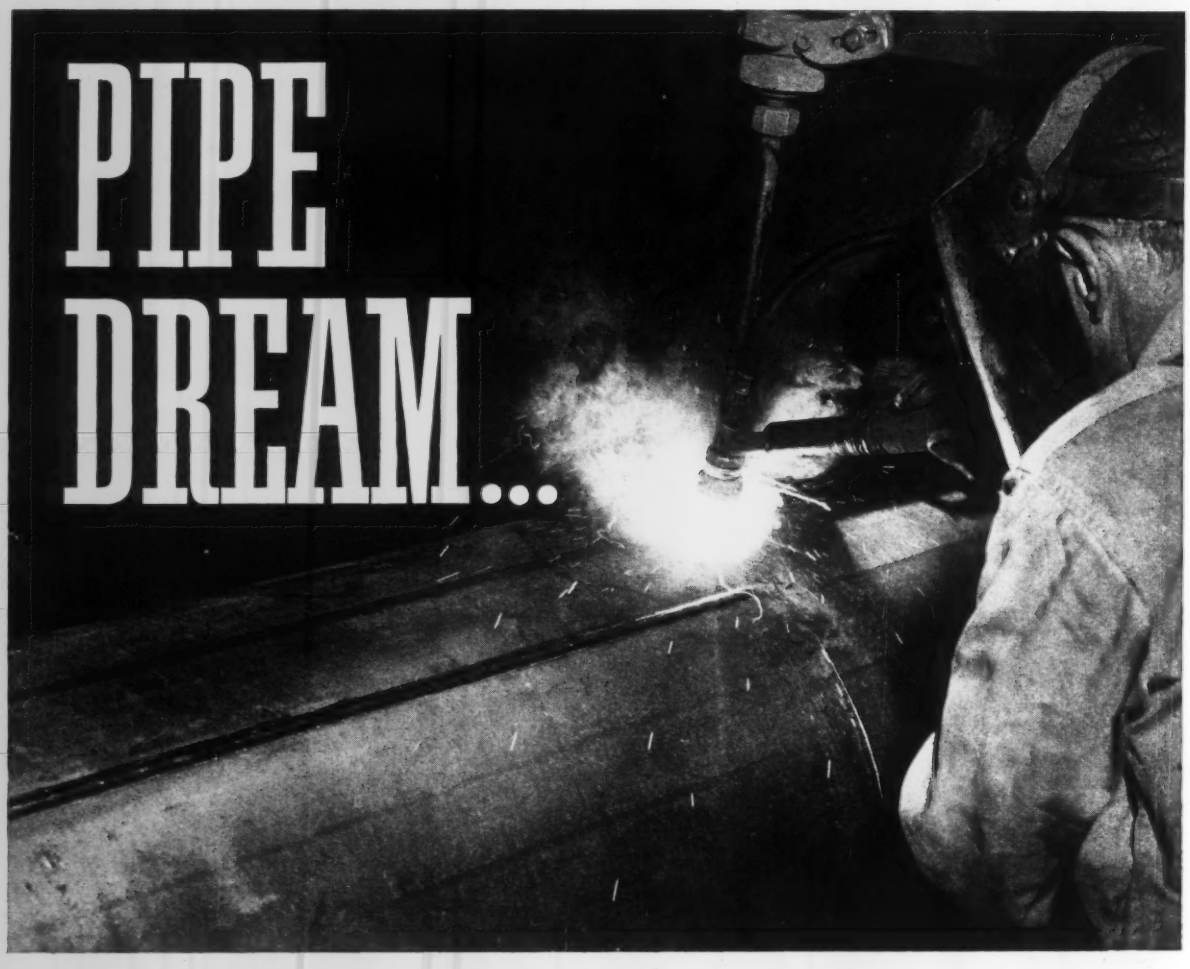
Tedious, costly work of Loading, Unloading and Stacking that take many men, many days can be compressed into a few hours . . . with just *one* man operating SILENT HOIST materials handling equipment . . . *releasing crews for other productive chores.* Costs rising? Competition rugged? SILENT HOIST may have an interesting answer for you! Details of some important case-histories will be furnished—cheerfully, without obligation.

SILENT HOIST & CRANE CO.
Brooklyn 20, N.Y.



SILENT HOIST KRANE KAR

HYDRAULIC Boom Swinging, HYDRAULIC Topping, HYDRAULIC Telescoping, HYDRAULIC Load Hoisting! Fluid Drive, Power Steering. 5 Sizes: 1½, 2½, 5, 10, 12½ ton capacities. Ask for Bulletin No. 79.



...UNIONARC Welding saves $7000 on one production run

UNIONARC Welding—LINDE's new electric welding method for steel—increased production by 300% and saved a western pipe mill $7000 on a single run of steel pipe. Replacing covered electrode methods, UNIONARC Welding is expected to save this company $150,000 a year.

UNIONARC Welding uses a continuously-fed wire electrode, magnetically coated with flux and shielded with carbon dioxide gas. It has three times the speed and weld penetration of covered electrode welding. And UNIONARC Welding gives you "finished", X-ray quality welds and low hydrogen deposits—in all welding positions.

See for yourself—ask your nearest LINDE representative to *prove* that UNIONARC Welding slashes time and labor costs over conventional methods. Call your local LINDE office today! Or write Dept.ST94, LINDE COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. Offices in other principal cities. In Canada: Linde Company, Division of Union Carbide Canada Limited.

Linde TRADE-MARK

UNION CARBIDE

"Linde", "Unionarc", and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Blough: Industry Is Inflation Scapegoat

Roger M. Blough, chairman, U. S. Steel Corp., says he is disturbed by what appears to be "a conscious or unconscious campaign of misinterpretation and even misrepresentation, the purpose of which is to place all blame for inflation upon the pricing policies of American industry." Mr. Blough charges that the nation's inflationary trouble is a result of heavy federal spending, a growing government deficit, and union-impelled wage boosts which have outpaced increases in industrial productivity. Those factors, he notes, were overlooked by the majority report of the Senate Judiciary Subcommittee's study of steel prices and their effect on inflation. He pointed out that profits of steel companies have dropped by $228 million since the $6-a-ton increase in July of last year. In the same period, the rate of profit has fallen from 7.2 per cent of sales to 6.2 per cent.

Anodized Electrical Wire May Be Practical

Aluminium Ltd. reports continued encouraging results in its research on anodized aluminum wire as a winding for electric motors. The firm claims the wire has nine advantages in the application: High temperature resistance, low space requirements, good heat dissipation, resistance to organic solvents, light weight, uniformity of covering, low cost, good resistance to abrasion, and it's a good base for overcoating materials.

Firm Formed To Bid on Nickel Plant

North American Nickel Corp. has been formed by four companies for the purpose of bidding on the U. S.-owned nickel plant near Nicaro, Cuba. North American founders include: Bunker Hill Co., San Francisco; St. Joseph Lead Co., New York; Falconbridge Nickel Co., Toronto, and Blyth & Co., a San Francisco investment firm. The government may or may not put the Nicaro property up for bidding, but the new firm says it intends to be ready if an offering is made.

Russian Railroads Expand Faster than Ours

Russia is outdoing the U. S. in improving its railroad system, says James M. Symes, president, Pennsylvania Railroad. "Density of traffic on Soviet railroads is well over three times what ours is," he notes. The rail official contrasted Russia's "complete freedom to build its transportation system any way it wants to" with U. S. policy where "for years our own federal, state, and local governments have been putting billions into nonrailroad transport." He added: There have been so many years of deferred maintenance that if next month's service were restored to 1956 levels, "we would have the most serious car shortage the nation has ever experienced."

Boeing Is Top Contract Holder

Boeing Airplane Co. is the top holder of military contracts. Its total: $7.7 billion. General Motors Corp. is second (about $7.3 billion). The Pentagon

reports that 100 companies received 63.5 per cent of all military prime contracts awarded during the last seven years. General Dynamics Corp. was the top contract getter during the past year, receiving $1,127,400,000 in new business.

Missile Potential To Double in Five Years

With knowledge gained from missile manufacturing, industry can expect the dollar volume of business for space flight equipment and technology to at least double within five years, says Brig. Gen. Homer Boushey (Page 39). One estimate puts industry's current dollar volume income for space flight research and development in excess of $45 billion. Example: Rocketdyne Div., North American Aviation Inc., has been granted a contract to develop a single unit, clustered, liquid fuel rocket engine for the Army. It should be ready within a year. Built from Thor and Jupiter components, it will develop 1.5 million lb of thrust.

For Aircraft Subcontractors, Better Flying

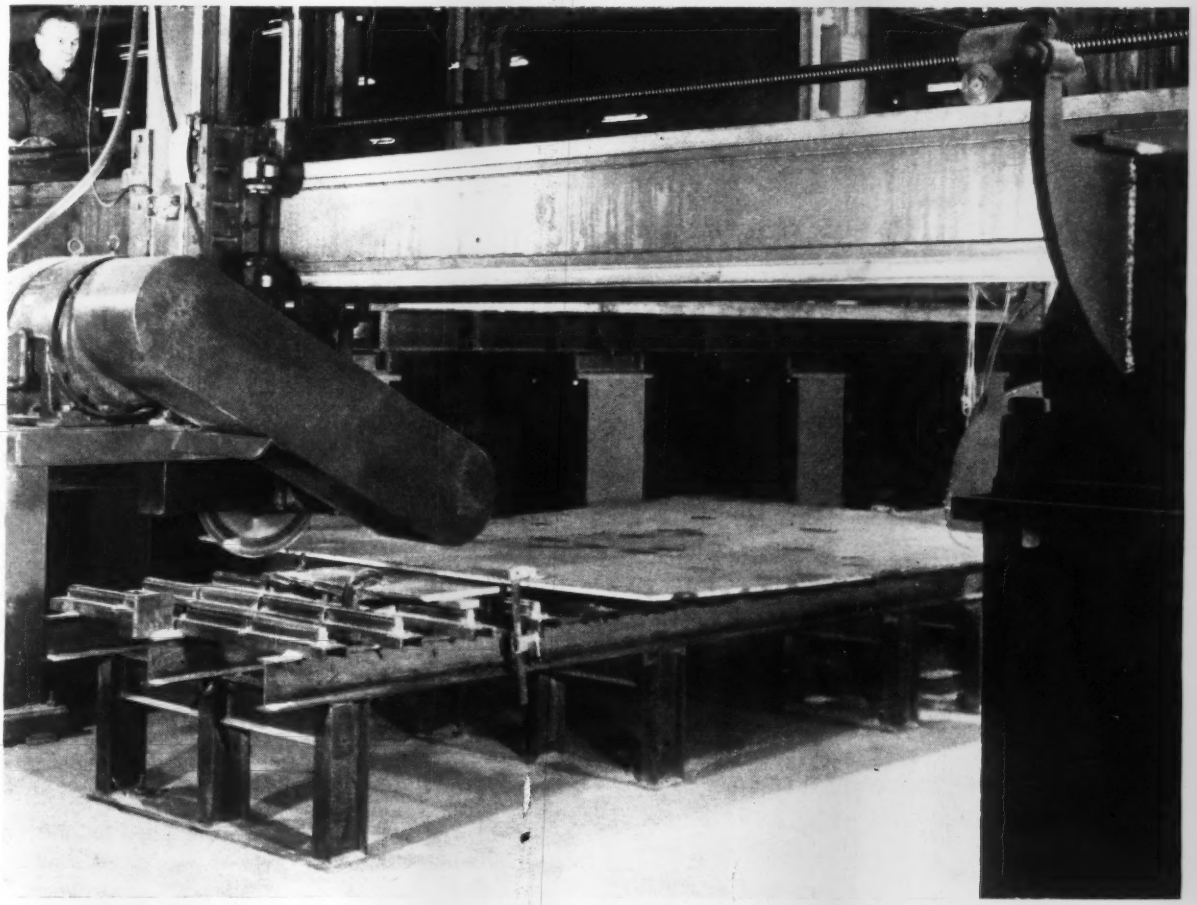
Look for the clouds hanging over the defense aircraft subcontracting industry to lift around the turn of the year. Some blue sky can be seen already: American Machine & Foundry Co., a big subcontractor, said last week its volume for major airframe makers rose 29 per cent in the second quarter, vs. the first. A small sub, Boxart Machine Co., Brooklyn, expects its fiscal '58 sales to equal '57's $800,000. It recently got a $40,000 order from Republic Aviation Corp. for F-105 work. Among prime contractors: Douglas Aircraft Co. bought from 4200 subs during 1958's first eight months, vs. 3900 during last year's like period. Boeing Airplane Co. has boosted its dollar volume of subletting. Republic Aviation says it will hand out about the same amount of work this year as last but anticipates a "substantial rise" in 1959.

Construction Shoots for Record

Construction contract awards set records in three successive months—May, June, and July. Says Associated General Contractors of America Inc., Washington: "The trend shows promise of continuing through the year and may lead to a dollar volume record." Value of awards let during 1958's first half surged to within 1 per cent of the record set in 1957's first period.

Straws in the Wind

In August, personal income hit a new high for the second successive month. It rose to $355.6 billion—up $1.4 billion from July . . . Buffalo Steel Corp., Tonawanda, N. Y., has been operating at 100 per cent of capacity since March . . . A 15-week strike at Keokuk Electro-Metals Co., Keokuk, Iowa, ended. The new two-year contract calls for a 5-cent-an-hour wage boost now, plus a 2-cent hike on Jan. 1 and a 5-cent increase on May 1, 1959 . . . Federal Power Commission notes that only 23 per cent of the nation's hydroelectric power potential is developed. Greatest promise is in river basins west of the Continental Divide.



This special Ryerson saw assures square, parallel cuts and smooth edges on stainless plate . . . width and length tolerances ± 1/32"

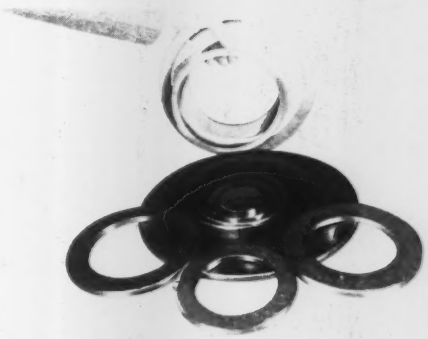
The plus you get when it's stainless from Ryerson

WIDEST SELECTION—No other source comes close to offering a comparable range of stainless types, shapes and sizes—so you can always get exactly what you need.

UNIQUE SERVICE—Big-capacity abrasive saw assures the ultimate in cutting accuracy . . . and shearing, hack-sawing and flame-cutting facilities also meet exacting requirements.

EXPERT TECHNICAL HELP—Ryerson specialists are always ready to work with you on any problem of stainless selection and fabrication.

No wonder more people buy stainless from Ryerson than from anybody else.



Machine-cut stainless rings and discs from Ryerson are *finished* parts to your specifications, priced below your own costs.

RYERSON CERTIFIED QUALITY

RYERSON STEEL

Member of the INLAND Steel Family

Principal Products: Carbon, alloy and stainless steel,—tubing, bars, structurals, plates, sheets,—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

The PROOF of DSC STEEL is in its PERFORMANCE ON YOUR JOB

DSC *AccuRolled*™ CR SHEET COILS

4½ year **Job-Performance Record** on AP PARTS Exhaust and Tail Pipes

January '54 through June '58

Score 99.9% Plus

A WORD ABOUT THE AP PARTS CORP. — This long-time customer, with plants in Toledo, Ohio, Grand Haven, Michigan, and Culver City, California, is the world's largest manufacturer of mufflers and exhaust and tail pipes in the automotive replacement field. AP subsidiaries also supply these components to car factories for original equipment.

SOMETHING ABOUT "PIPES" — "Pipes" are everyday automotive necessities . . . an indispensable part of the exhaust system which insures efficient engine performance and motoring safety and pleasure. Thanks to the engineering, production and marketing skills of progressive manufacturers like The AP Parts Corp., "pipes are on tap" at moderate cost at car service centers everywhere.

"Pipes" are actually lengths of electrically welded steel tubing . . . specially sized and bent into complicated shapes to fit cramped clearances between body and frame of individual car makes and models. AP makes over 1,000 different pipes for the cars on the road today . . . plug or ring gauged to five-thousandths tolerance.

THE RECORD — Deliveries: initial shipments, January 1954; beginning March 1954, monthly without interruption. Cumulative weight: thousands of tons. Rejections during these 4½ years: a single coil in 1955; one in 1956 . . . Here are the job performance scores year by year:

1954	100.000%	1956	99.828%
1955	99.801%	1957	100.000%

1958 (latest report to 7/1) 100.000%

PART PLAYED BY DSC STEEL — DSC AccuRolled CR SHEET COILS provide the essential combination of uniform gauge and temper and consistent weldability for non-stop roll-forming, welding and shaping operations . . . as in "Pipe" fabrication. Add manufacturing savvy like AP's and the stage is set for high-scoring job-performance and low unit production costs . . . another example of customer-supplier teamwork "on the job."

Like to know how we do our part—whatever the DSC product may be? Just write to our G.S.O. or call a DSC Customer "Rep" . . . soon?

Customer Satisfaction Is Our Business

DSC MILLS AND PRODUCTS

PORTSMOUTH DIVISION, PORTSMOUTH, O.
Coke • Coal Chemicals • Pig Iron
Basic OH Steel Ingots • Blooms • Slabs • Billets • Rods
Hot Rolled and Cold Rolled Sheets • Low and Medium Carbon
Manufacturers Wire • High Carbon Specialty Wire • Aluminum Cable Strand
Reinforcement • Rope Wire • Tire Bead Wire • Welded Wire Fabric

MILL DIVISION: DETROIT, MICH., HAMDEN, CONN.
Cold Rolled Carbon Steel Strip
Flat Cold Rolled Carbon Spring Steel

35TH ANNIVERSARY YEAR DSC

©DSC 1958

DETROIT STEEL CORPORATION

GENERAL SALES OFFICE, DETROIT 9, MICHIGAN

CUSTOMER "REP" OFFICES:
Charlotte, N. C., Chicago, Cincinnati, Cleveland, Columbus, Ohio., Dayton, Ohio., Detroit, Grand Rapids, Mich., Hamden (New Haven), Conn., Indianapolis, Jackson, Mich., Louisville, Ky., Milwaukee, Wis., New York, St. Louis, Toledo, Worcester, Mass., Winneconne, Wis.

How's Your Corporate Image?

A Corporate Image is a gimmick allegedly thought up by the Madison Avenue word merchants to denote a company's reputation or personality.

It is difficult to define because of the many—and often intangible—elements that go into it. But whatever it is, a good one is the lifeblood of a successful business.

In checking your corporate image, here are some of the questions:

Does your company have a reputation for fair dealing, good service, quality products, excellent research? Or is it known for fast deals, price cutting, indifferent service, and products that just get by?

Is your company regarded as a good one to work for? Or are the bosses regarded as cold-blooded, stuffed shirts?

Do you have an aggressive sales organization that knows its products and creates a good impression among customers and prospects? Or is it made up of indifferent people who are willing to accept an order if it is offered?

Is your company known as a leader in its field? Or does it occupy an unknown spot somewhere down the line?

Is your company known as one that is going places? Or as one that is dead on its feet?

Those are only a few of the questions that must be answered in creating a fresh, new corporate image and in remodeling and maintaining an old one.

The job requires ceaseless effort both externally and internally. Good public relations and promotion are indispensable in building a favorable image outside.

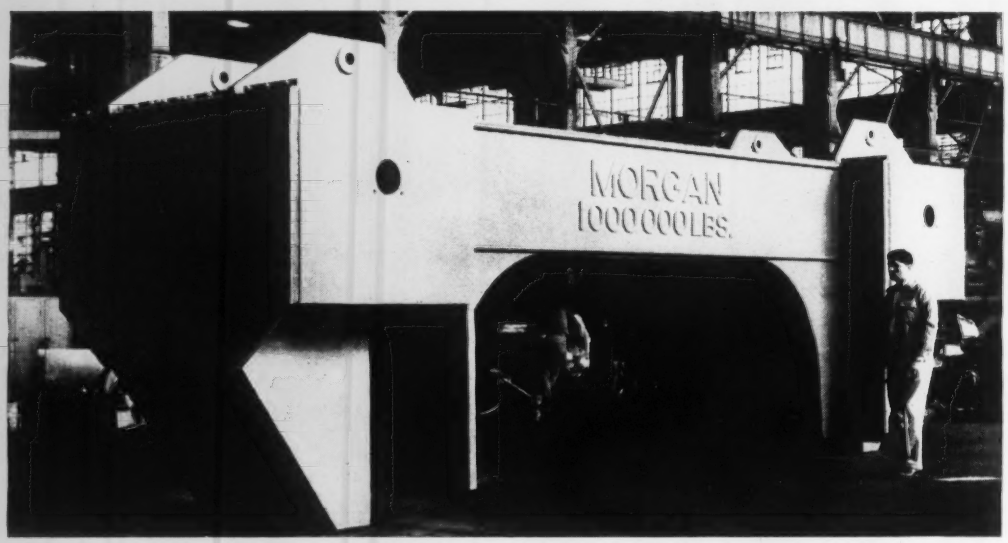
But the kind of an internal organization you develop is equally indispensable.

Creating a good corporate image adds up to making certain your company is regarded as a good one to do business with.

Irwin H. Such
EDITOR-IN-CHIEF

Weldynamics

ARC WELDING AT WORK CUTTING COSTS



All-Welded Lifting Beam for 500-ton hot metal ladle crane

More strength—less weight for world's largest ladle crane . . . *welded design does it for less money*

Maintaining highest possible strength with a minimum of weight is the prime objective in cranes like this. That's why welded construction is chosen.

Actually, 25% less steel is needed by welding these heavy cranes. This means material and fabricating costs are substantially lower. In addition, the crane is more maneuverable, availability higher, upkeep costs are lower.

Why not duplicate these benefits in your products now? Write us to show you how.

DESIGNERS! ENGINEERS! New 11th Edition Procedure Handbook of Arc Welding Design and Practice has 1300 pages of complete and up-to-date engineering data to help you develop efficient, low cost product designs. $3.00 in U.S.A. postpaid, $3.50 elsewhere.

The prime objective was to accomplish the highest possible pay load with assurance of uniform stress conditions and uniform material throughout with a minimum of weight at the lowest possible cost. These objectives were achieved by the extensive use of welded design throughout.

C. F. SIMMERS, Vice President, Engineering
The Morgan Engineering Co.

The World's Largest Manufacturer of Arc Welding Equipment

LINCOLN®

© 1958 The Lincoln Electric Company

THE LINCOLN ELECTRIC COMPANY • DEPT. 1644 • CLEVELAND 17, OHIO

How Automotive Industry Will Buy Steel

(Barring long labor troubles)

Quarter	Car Output	Truck Output	Steel Shipments
3rd, 1958	700,000	180,000	1,900,000
4th, 1958	1,450,000	240,000	3,200,000
1st, 1959	1,500,000	250,000	3,500,000
2nd, 1959	1,500,000	275,000	3,600,000
3rd, 1959	900,000	240,000	2,600,000
4th, 1959	1,600,000	300,000	3,900,000

Total automotive steel shipments, 1958: 9.2 million tons.
Total automotive steel use, 1958: 10.4 million tons (1.2 million tons from inventory).
Total automotive steel shipments, 1959: 13.6 million tons.
Total automotive steel use, 1959: 12.8 million tons (800,000 tons to inventory).

Autos Set Pace in Fourth Quarter

Fourth quarter production of 1,450,000 cars would mean the best three months of the year for much of industry. Even brief labor troubles wouldn't lower sights substantially

STEEL shipments to the automotive industry should be 68 per cent higher in the fourth quarter than in the third, barring prolonged labor troubles.

The table above shows how market researchers with Pittsburgh steel companies figure the auto companies will buy their products for the next year. Even a walkout of two weeks or less wouldn't change the lineup substantially, they believe.

Auto's Influence — With automotive output for the fourth quarter at 1,450,000 cars, the ingot rate should climb gradually to reach a 1958 high of about 75 per cent of capacity early in December. It's at 66.5 now. Only an auto walkout of more than two weeks would push the ingot rate into the mid 80s this year. It would move there quickly after labor troubles are settled because automakers would need the steel fast to make up lost production.

In a 4.3 million auto year like '58, steelmen will produce about 85 million tons of ingots. With a 5.5 million car and 1.1 million truck year in '59 and comparable increases among other users, steelmen think they should make 110 million tons of ingots next year. Usually conservative, steel's market researchers are betting on that kind of auto output in '59 even though some of Detroit's analysts are not nearly so optimistic (privately). Some 18 to 20 per cent of all steel produced goes to the auto industry in good years. (The figure thus far this year is 15.1 per cent.)

Roundup — Here's what some other auto suppliers say the production of 1,450,000 autos in the fourth quarter would do for their businesses:

Variety Stamping Co., Cleveland —"We're at about two-thirds capacity now. We'd climb to 70 or 75 per cent of capacity."

Eastern bearing manufacturer— "Our fourth-quarter business would climb 20 to 30 per cent."

Superior Foundry Inc., Cleveland —"We expect a modest gain of between 5 and 10 per cent in October."

Midwestern industrial rubber goods manufacturer—"Fourth quar-

ter should be on a par with September, our best month this year."

Superior Die Casting Co., Cleveland—"Our business should climb by 25 per cent in the fourth quarter."

Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.—"A peaceful settlement won't appreciably affect our volume because we build to a finished goods inventory."

Auto suppliers are continuing to build parts on regular 60-day release schedules. But some venders (primarily stampers) have not received shipping orders for parts now under construction. Several have been told to bank fabricated parts in their own plants until shipping instructions come through.

What It Means—"We have to continue to build parts and ship them as scheduled," says Perry Williams, executive vice president, Kelsey Hayes Co., a Detroit wheel builder.

Mr. Williams' appraisal applies to most other auto venders. They have orders for parts to be built and delivered through October. By then, they expect further releases to carry them through the end of the year. Barring labor troubles, suppliers will be placing their own orders for November delivery of steel and other raw materials.

Robert T. Woods, Detroit sales engineer for Electric Autolite Co., Toledo, Ohio, sums it up: "We're working right to scheduled releases and shipments, and we've received no word to do otherwise. If any walkouts come, we'll probably be asked to fabricate a certain quantity of parts and then stop." The usual inventory in such cases is about 30 days, he indicates.

Reuther Bows to Ford

WALTER REUTHER and his United Auto Workers took a licking when they settled with the Ford Motor Co.

Basically, the settlement is a three-year extension of the contract which expired on May 31 and amounts to union acceptance of the offer made by Ford in June.

In the words of Carl Stellato, president of UAW Local 600, Dearborn, Mich.: "We were successful in improving Supplemental Unemployment Benefits. Workers will receive 65 per cent of their pay for their entire compensation period instead of 65 per cent for the first four weeks and 60 per cent for the remainder." Compensation periods were lengthened from 26 weeks to 39. Ceiling payment was boosted from $25 a week to $30. Workers on short weeks can draw up to $30 to supplement their pay.

Other Concessions—Ford and the UAW agreed on a severance pay plan covering workers who lose jobs because plants are moved or closed. Workers with up to two years' seniority will draw one week's pay. The plan moves up gradually in accordance with seniority to a top payment of 1200 hours of severance pay for a man with 30 years service.

Pensions will also be increased, including a boost for men already retired. An early retirement clause allowing men to retire at 60 (by mutual agreement of worker and company) was also settled upon.

The company base rate of pay was adjusted—also without costing Ford much. It was moved upward to include 15 cents of the 20 cents workers are already receiving from cost-of-living increases. Pay increases were granted workers for Saturday and Sunday turns. Skilled workers will receive an extra 8 cents hourly for straight time.

The company would not budge on one point: The annual improvement factor (now 2.5 per cent of base pay or 6 cents hourly, whichever is greater) was not changed.

A Company Victory—The settlement is a clear union defeat. In essence, the contract is the same one that expired four months ago.

If any snags are encountered by the other auto companies in their contract negotiations, it won't be on these basic points.

McDonald Backed

Steelworker president wins backing of convention delegates as dissidents get snowed under

PUBLICLY, at least, David J. McDonald has the strong backing of the United Steelworkers of America.

Chief business of the union's ninth constitutional convention in Atlantic City last week was to demonstrate that the USW is four-square behind its president.

Smoothed Over—Whatever differences may divide Mr. McDonald and members of his executive board were forgotten in the interest of harmony. The USW is closing ranks for next summer's contract talks with the steel industry. (Delegates passed a resolution calling for substantial improvements next year in wages, hours, incentives, job classifications, SUB, pensions, insurance, vacations, holiday.)

Of the 3500 convention delegates, perhaps 1200 were on the international's payroll. Many carried the proxies of locals that couldn't afford to send their own delegates. They gave Mr. McDonald working control of the convention. And at a signal from the executive board, they produced a "spontaneous" demonstration in his behalf.

Impressed? — Whether Mr. McDonald was convinced by this show of support wasn't too clear. In his opening address, he underscored the threat of "dual unionism" and asked delegates to "rip this cancer out of your bowels." Observers wondered why the union chief had launched such an attack on the dues protest group if he was confident of rank-and-file support.

In a preconvention caucus, the dues protesters were able to muster only 25 to 30 delegates. Among them were the presidents of three Pittsburgh locals: Donald C. Rarick (who opposed Mr. McDonald in the 1957 election), Nicholas Mamula, and Frank O'Brien. They admitted that the dues issue was dead but insisted they would press their fight for more "democracy." Their principal objective: Change the constitution so that staff men could be elected by the locals instead of appointed by Mr. McDonald. Delegates vetoed the idea

Changes Simplify Redstone Engine

(Number of parts)

	1958	1953
Regulators	1	4
Relief valves	1	2
Solenoid valves	4	12
Pressure switches	2	6
Check valves	0	3
Test connections (valve)	1	4
Pneumatic filter	0	1
Total	9	32

Rocketdyne Div., North American Aviation Inc.

Gen. Boushey says metalworkers must adapt to space age

Missile Potential Soars

American Rocket Society conference points out that metalworkers wanting to succeed in the space age will have to produce reliable, light parts, within a tight budget

AS MISSILES evolve from the exotic to the practical stage, manufacturers must be able to produce reliable, lighter parts, and they must do so within tighter cost limits, claims Brig. Gen. Homer Boushey, director of advanced technology, Department of the Air Force.

General Boushey participated in the American Rocket Society's fall meeting in Detroit last week where ARS forums discussed trends metalworking firms must follow to achieve the goals stressed by the general.

Design — "The time to reduce manufacturing costs is in the early stages of design," asserts Gordon E. Sylvester, assistant chief engineer, product engineering, Convair Div., General Dynamics Corp., Pomona, Calif. Mr. Sylvester says that as missile production steps up, designers will call for more standardized parts as one way of cutting costs.

He adds that automatic equipment is being developed for quantity missile output and future parts must be designed to fit it.

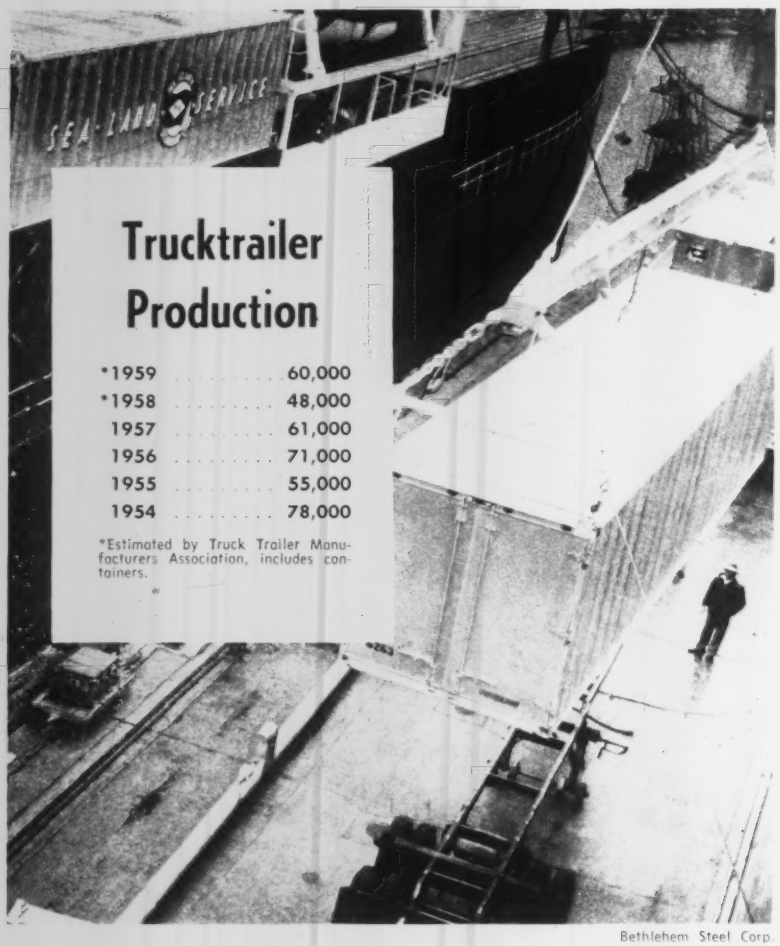
Materials — Missilemakers report that thin wall castings will continue to replace sheet metal fabrications for items like electronic supports and chassis. In larger housings, fine sand castings will replace precision cast parts which require greater rigidity for shock resistance.

Future missile manufacturers will use more electrical discharge equipment with precision cast shaped electrodes for intricate cutting work. There will be an increase in the use of ultrasonic cleaning equipment. Sheet metal parts will be assembled, then precision finished to maintain high accuracy. Some of the parts will be coated with an oversize anodic coating which can be lapped to finish tolerances.

Hydraulics—A. B. Billet, senior staff engineer, Aero Hydraulic Div., Vickers Inc., Detroit, says there will be greater emphasis placed on miniaturized hydraulic components such as servovalves and pumps. Some of the miniaturized parts must operate at $-65°$ F to $1000°$ F and at pressures up to 3000 psi.

To achieve the goals, Mr. Billet says ductile iron will replace bronze for cylinder blocks. "Of special promise is the development of surface treatments and combinations of metallic and known metallic materials that have special corrosion resistant properties. This would include tungsten carbide flame plating and newly developed high temperature plastics," adds Mr. Billet.

Make Changes Cheaper — One problem missilemakers still face is the number of engineering changes that continue through all phases of production. That the changes are worthwhile is evident from the chart (above) which shows how Rocketdyne Div. of North American Aviation Inc., Chicago, has managed to reduce costs on the Redstone missile engine by simplifying design.



Trucktrailer Production

*1959	60,000
*1958	48,000
1957	61,000
1956	71,000
1955	55,000
1954	78,000

*Estimated by Truck Trailer Manufacturers Association, includes containers.

Bethlehem Steel Corp.

Trucktrailer Sales Bumpy

Developments such as piggybacking and containerization have trucktrailer buyers up in the air. Their wait-and-see attitude and the recession are holding down trailer sales

CONTAINERIZATION (universal boxes designed to move from packer to receiver by any means of transportation on one bill of lading) is expected to revolutionize the transportation industry.

In five to ten years, says John B. Hulse, managing director of the Truck Trailer Manufacturers Association, the bulk of trailer makers' business will be in modular containers. About 10 per cent of 1957's total unit output was containers, he says, and he expects the same ratio this year.

Containerization is already doing the job for Pan-Atlantic Steamship Corp., Mobile, Ala. Pan-Atlantic has six ships which carry nothing but trailerized containers (containers similar to semitrailers but which have detachable wheels). Dock time has dropped 80 per cent, and stevedoring productivity has jumped from 25 tons per gang hour to 500.

Standards Needed—But until sizes are standardized, growth of containerization will be slow. Committees, composed of representatives of transportation industries, are working on a program now. (Sponsor: American Standards Association.)

Buyers don't know whether to invest in standard equipment or to wait until the standards are worked out. Such uncertainty and the recession have caused first half trailer sales to drop to 21,000 units; 10,000 under first half of 1957.

Sales Inch Up—Mr. Hulse says that sales are picking up now due to the general business uptrend and the buying of firms which were holding back in hopes of a cut or curtailment of the manufacturers' excise tax. He estimates 1958 sales at 45,000 to 50,000 units.

"We'll have to go some to hit 50,000 units," says Mr. Hulse, "but that is still under what I consider par for the industry—60,000 units. We should hit it next year; that is, if the economy continues on the upswing."

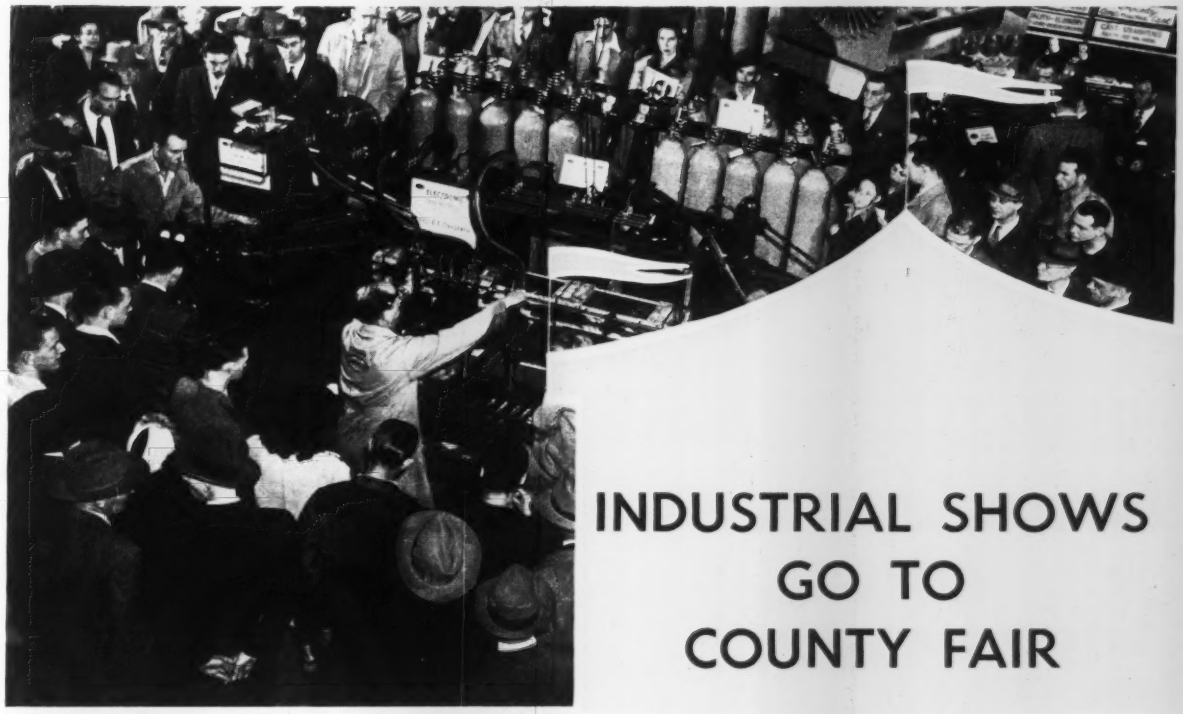
Piggybacking Is Stopgap—Fruehauf Trailer Co., Detroit, says piggybacking (standard trailers carried on railroad cars) is growing, but how much is anybody's guess. Freight forwarders have gone into it in a big way since railroads began charging piggybackers by miles traveled instead of by pounds carried. On a run from Boston to Dallas, for example, the saving comes to 72 per cent (shipper furnishing trailers and flatcar).

"But," says Mr. Hulse, "piggybacking is only a stopgap procedure until containerization is more fully developed."

Aluminum Losing Favor?—The trend to containers will also have an effect on materials. Aluminum, the overwhelming favorite, may encounter trouble. "Weight," Mr. Hulse says, "is not as important a consideration in containers, and freight is becoming less and less dense" (fewer pounds per cubic feet).

Stainless Affected—Indecision due to technological changes is also having an adverse effect on stainless steel trailers. To justify the extra cost, a stainless trailer must be amortized over at least ten years.

Buyers are not willing to gamble that their stainless vans will not become obsolete before their cost is amortized.



INDUSTRIAL SHOWS GO TO COUNTY FAIR

Illinois industrialists help overcome community apathy by displaying products and manufacturing methods. It pays off in community identification with the firm

THE COUNTY FAIR idea is being put to use by industry in many small towns. The new look: Industrial fairs.

Why?—Small town industry suffers these perennial headaches:

1. Skilled workers drift away in response to the lure of the big cities and more appealing climates.

2. Talented high school students go to college but don't return to their home towns to follow careers in industry.

3. Retail businessmen and citizens are generally apathetic toward companies close to home. Local industry is less glamorous than its counterpart in other cities—unfortunate circumstances (like strikes and layoffs) tend to be remembered more than growth and total payrolls.

One Solution—Typical of the new attractions is the Sterling-Rock Falls (Ill.) Industrial Fair which opens Sept. 25 in the Sterling High School field house and runs through Sept. 27. About 30 manufacturers have set up exhibits of "Chicago trade show quality" replete with entertainment.

Objective of fair: A public relations program aimed at demonstrating to the expected 15,000 fairgoers that they can be proud of their communities, their companies, and their jobs.

Last spring, eight Sterling manufacturers put on a program displaying their products to retailers. Executives were amazed: Most merchants had little conception of what was being manufactured in their communities.

Product Identification — Northwestern Steel & Wire Co., which employes 2400 workers, was known primarily as the "wire mill" and Frantz Mfg. Co. (with 270 employees) as a hardware producer. Few businessmen could relate the total product lines of these or other firms—even though many of the items they retailed were made by or contained components produced by local manufacturers.

"It was obvious, if the businessmen knew that little about our industries, that the average citizen was in the same boat," says G. C. Hinueber, Northwestern Steel's advertising manager.

Committees from each community's Chamber of Commerce were appointed to find a solution. Result: The fair idea. Only manufacturers (vs. service organizations) were invited to participate. Emphasis is on top quality exhibits appealing to Mr. & Mrs. Citizen.

On Display — The Eureka Co., which employs 70, will demonstrate the upholstering phase of its production of hearses and ambulances. International Harvester Co. (400 employees) will show its tractor power loaders. Northwestern Steel will set up a quality control laboratory.

Other exhibits will include screw machines in operation, nails being produced, wire products being formed, and radio-controlled garage doors.

The Setup — Special invitations

are being sent to all area high schools to stimulate interest in area manufacturing plants. Royal Breed, sales representative for Sterling Commercial Steel Ball Corp. and a member of the fair committee comments: "I grew up in Sterling and watched many of my high school classmates leave for jobs in other places. I wonder how many could have done better coming back after college and taking advantage of the opportunities here."

A few invitations were also sent to executives of outside firms. "We have over 30 manufacturers here employing nearly 5500 people in the two communities," a committeeman explains. "We're hoping a few of these executives will come and look us over—we can always use another good plant or two."

Population of Sterling is 15,000. Rock Falls, directly across the Rock River, has 10,200.

Russian Experts Arrive

Nineteen Soviet steel and mining experts have started a one-month tour of American steelmaking and iron ore mining facilities.

The Russian delegation is returning a visit by an American steelmaking and mining group which toured Russia last spring. (STEEL's Editor-in-chief, Irwin H. Such, was a member of the delegation.)

Japanese Steel for U. S.

Add another name to the list of overseas steel producers out to capture a share of the U. S. market.

Japan Steel & Tube Corp. (Nippon Kokan KK), Japan's third largest producer, has opened sales offices in New York City for distribution of its oil country goods (casing, tubing, line pipe) in the U. S.

The company produced 1.3 million tons of steel last year. By the end of 1959 its capacity will be 2.3 million tons. "We hope to capture a portion of the U. S. market to help take up our expanding production," Ikuya Ishizu, the firm's general sales manager told STEEL.

Look for a stepup in exports by other Japanese steel companies. One indication: In 1950 Japan's steel production was about 4 million tons. Last year it hit close to 12 million tons, and more capacity is on the way.

Termed TVX, this compact system is a new . . .

Tool for Quality Control

QUALITY CONTROL is getting a boost from television. A new x-ray system permits economical total product inspection on a TV-type screen. The image is 10,000 times brighter than a conventional fluoroscopic image, says General Electric Co.'s X-Ray Dept., Milwaukee, developer of the system. It can be viewed in a normally lighted room.

Known as the TVX x-ray image intensification system, it provides a picture one-half to three times the size of the object. Enlargement does not greatly affect sensitivity. Extra monitors can be added to permit simultaneous viewing from different locations. They may be placed up to 1400 ft from the camera—keeping the inspector safe from x-radiation.

It's Compact — Three basic units make up the system: An x-ray sensitive camera, a control unit, and a viewing monitor. It can be used with any standard x-ray generating apparatus and positioning equipment. Products can be moved past the camera as fast as 12 fpm and still give good definition for inspection.

The x-ray sensitive camera tube, key to the system's success, allows direct transfer of x-ray energy to electron energy. That eliminates three energy conversions which formerly caused considerable noise. The camera weighs 20 lb; control unit, 66 lb; monitor, 88 lb. Price: About $7500, plus x-ray generating apparatus and material handling equipment.

Five subchasses in a metal cabinet make up the control unit. It's equipped with ventilating screens and a blower to protect components from overheating. A 12-in. picture tube and all monitor components are housed in 15 x 22 x 16 3/8 in. metal cabinet. It can be set on the control unit (see picture).

Russia Upsets Tin Market

Despite British and Dutch limits on tin imports from the Soviet Union, the metal is selling at the floor level price. Communists want it channeled into Britain

RUSSIAN shipments into Great Britain and the Netherlands brought a brief price boost to tin in the London markets.

The price jumped about 2.5 cents a pound early in September to reach the English equivalent of about 94 cents. But it has since slipped far enough that the International Tin Agreement's Buffer Pool manager has been forced to buy tin to keep the price at the agreed minimum (91.25 cents).

What Happened?—The United Kingdom forced the slack in USSR shipments by announcing that henceforth no more than 840 tons could be imported each quarter from the Soviet Union. Contrast: Russia shipped some 2300 tons into Britain during the second quarter.

The Netherlands, another large importer of Soviet tin, also imposed similar restrictions.

But it didn't faze Khrushchev & Co. The Russians reportedly are circumventing the import curbs by selling their tin to other countries (such as Germany and Japan), which normally would buy from producing members of the Buffer Pool (Malaya, Nigeria, Belgian Congo, Indonesia, Bolivia, and Thailand).

The price gains stemming from the English and Dutch restrictions vanished quickly under the impact of continued Russian shipments into Free World markets and the absence of sustained buying by consumers.

Stocks—London warehouse stocks jumped sharply last week to a total of about 19,200 tons (an increase of 750 tons). Metal brokers indicate a belief that this reflects large Buffer Pool purchases on the London market.

What It Means—The countries participating in the International Tin Agreement have had trouble with their price propping since the pact was signed in 1956. Despite considerable restrictions this year, the price has rarely moved above the floor price of 91.25 cents a pound.

The Buffer Pool manager has about 25,000 tons that was accumulated in the support operations and he may sell only when the price hits 97.5 cents. And that's not likely.

Russia apparently aims not only to sell to Germany and Japan, but also to channel more into Britain. Example: Japan annually buys about 7000 tons from Malaya. If she switched her buying to the Soviet Union, the extra Malayan tin would have to be absorbed by Free World markets.

Canada Ore Shipment Up

Ore shipments by Canadian iron mines in July hit 1,554,570 tons, compared with 1,395,080 tons in June. Shipments in July, 1957: 2,238,962 tons.

The increase reflects the revival of U. S. steel production. Canadian iron ore shipments for the first seven months were 3,899,756 tons, down 36 per cent from the 5,-106,452 tons reported during 1957's first seven months.

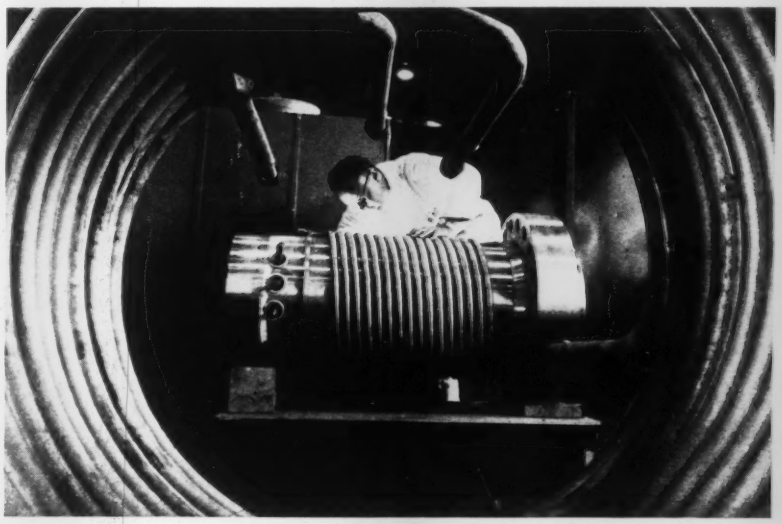
China Sets Steel Quota

Chinese Communist steel production will be doubled this year, if orders from China's Politburo are followed.

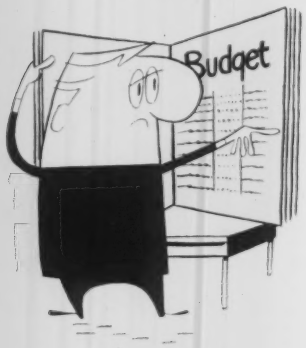
Radio Peiping says the new goal for 1958 is 11.8 million tons, vs. output of 5.9 million tons last year. The new target is the third set so far for 1958. In February, it was 6.8 million; in May, it was changed to 8.8 million to 9 million tons.

Reaching the new goal would bring China's production close to that of France or the combined output of Italy and Belgium. To achieve it, China's second half production would have to nearly double the first half's (which was 26 per cent above output in the previous half-year).

Chance for Success—Too little truth is spoken on Radio Peiping to accurately gage China's odds for succeeding. But it's significant to note that the official party voice reports that the number of small blast furnaces in China rose from 30,000 in July to 170,000 in August.



A CANNED MOTOR PUMP, seen through a set of cooling coils, is prepared for Belgium's first atomic powerplant. Two such pumps (each at 300 hp) are among components being made by the atomic equipment department of Westinghouse Electric Corp. These units will circulate 6250 gallons of water a minute through the primary loop of the reactor to extract its heat



Washington Budget Worries Increase

THIS FISCAL YEAR, the Defense Department will withhold from the contract pipeline over $1 billion worth of orders authorized by Congress. In terms of actual spending in fiscal '59, only about $100 million is involved, says Budget Director Maurice Stans. The other $900 million is money that won't be spent in fiscal 1960 and 1961, as originally planned, since it won't get contracted this year.

Programs affected: Congressional authorization for four more Polaris-firing submarines (five are on order); over $100 million for troop transports; over $50 million for jet tankers; about $50 million for the Hound Dog missile; $90 million for the Minuteman solid fueled ICBM. (Since it's just entering the R&D stage on solid footing, such action on Minuteman funds could delay the program up to a year, estimates one source.) All Pentagon sources deny that Defense is under a "freeze" order similar to that of 1957, but there seems little doubt that the administration is doing just that to maintain some semblance of a balanced budget for fiscal 1960 and 1961.

Another concern of the Budget Bureau: If the highway trust fund doesn't pick up more money from increased gasoline taxes by fiscal 1960, then Capitol Hill roadbuilders will turn to the general funds of the Treasury Department. If they don't, and taxes aren't increased, the federal highway program will start to falter almost as soon as it starts to roll. (The fund will have a $1-billion deficit by the end of fiscal 1960 at present spending and collection rates, says Mr. Stans.)

The highly touted Hoover Commission budget reform bill, passed by Congress this year, will not help the administration's spending problems, concludes the director, until new budgetary procedures are developed by many government agencies, including a move to accrued accounting practices by the Defense Department.

Progress Report On ARPA

Commonly described as the Defense Department's "space agency," the Advanced Research Projects Agency is doing more than spacework, notes Lambert Lind Jr., special assistant to the director. Its projects fall within these areas: 1. Those that cannot be identified with the mission of a particular military service. 2. Those where the missions of the services overlap. 3. Those handed to ARPA, rather than one service, "for various reasons." (The third category would presumably cover technology not available to a service.)

ARPA breaks through the old barrier of allowing military R&D only when the end product could be readily identified with a weapon system, suggests Mr. Lind. This means, he adds, that "Defense is prepared to sponsor pure research," including work in re-entry physics, early warning radar, ATA processing, and high performance solid propellents.

Concern for Foreign Aid Program

Foreshadowing significant changes in our mutual security program next year, eight members of the Senate Foreign Relations Committee (including one Republican) have written Ike about the "serious distortion in relative importance attached to military aid on one hand and technical assistance on the other."

Counting Russian efforts to be economic as well as military, and our military aid to sometimes be of benefit to undemocratic governments, these senators will lead an attempt to reshape our foreign aid program into an economic offensive designed to pull underdeveloped countries away from the communist bloc.

Observers regard this expression of "deep concern" about the program as timed to forestall an effort in Congress next year to kill military aid and drastically reduce economic assistance.

10 Per Cent of 86th To Be Frosh

With seven Republican senators, 31 Republican representatives, and 11 Democratic representatives not scheduled to return to their seats next January, almost 10 per cent of the 86th Congress will be freshmen. Biggest loss to the Republicans will be such Senate leaders as Knowland (Calif.), Jenner (Ind.), Smith (N. J.), Ives (N. Y.), Martin (Pa.), and Flanders (Vt.). The party hopes to replace them with experienced legislators from the House like Kean (N. J.), Keating (N. Y.), Scott (Pa.), and Prouty (Vt.).

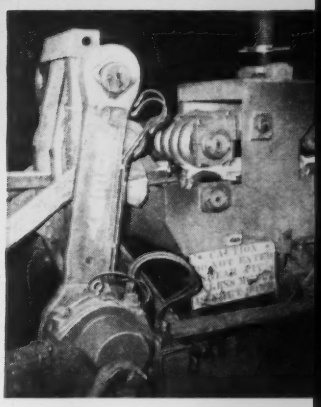
Assuming a Democratic sweep in November, the character of the new Congress will closely follow that of the 85th because the same Democrats will be running the committees.

Equipment Disposal Hit by Dawson

Rep. William Dawson (D., Ill.), chairman of the House Government Operations Committee, will probably move to check the disposal of surplus construction equipment by the armed forces. Civil defense agencies and soil conservation groups are reportedly getting the equipment at little or no cost and using it in competition with general contractors. The government agencies get more of the equipment than they need, then rent it out or sell it.

Loewy flying shears deliver undistorted billets and clean cuts with close tolerances

▲ Test-shop erection of flying shear built by Loewy-Hydropress to the design of Loewy Engineering Co., Ltd., Bournemouth, England.



Loewy flying shear installed at the delivery end of a continuous billet mill at Keystone Steel and Wire Company, Peoria, Ill. Closeup view shows the shear with pinch roll unit in operation. ▶

The difficult problems involved in the design of a flying shear for heavy stock—strictly perpendicular cut, horizontal travel, and synchronization with the speed of the material to be cut—are ideally solved in Loewy flying shears.

Due to the kinematics of the blades, the cut material will remain absolutely straight; no bending or distortion of head or tail ends can occur. Further, Loewy flying shears are electrically operated and work on the start-stop principle. For each cut, an automatic pinch roll counting mechanism initiates starting the two main motors to make one cut, after which the blades are returned to their original position. Speed and sequence of cuts can be exactly related to the speed and production of the mill.

Situated immediately at the delivery end of, and in line with, a continuous bar or billet mill, the shear shown above will cut material up to 4 in. square into lengths from 12 ft. up at speeds in accordance with the delivery speed of the mill train.

Loewy flying shears, as an auxiliary to bar and billet mills, are usually supplied with complete billet handling equipment.

Loewy-Hydropress bar and billet mills, merchant mills, skelp mills, blooming mills, strip, slabbing, structural, rail mills, special mills, and all auxiliary equipment are designed and built to customers' particular requirements. Let us know in a preliminary way what you have in mind. We will promptly show you how we can serve you and give you the benefit of every possible economy. Write Dept. B-9.

VISIT US—BOOTH #497-A—
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Tubexperience in action

How does carbon content control hydraulic tubing quality?

Precise metallurgical controls help Superior's (SAE) Hydraulic Tubing outperform all other types

*Extra quality is the reason for the high ductility and longer, more reliable service you get with Superior hydraulic tubing. This extra quality is actually built in through precise metallurgical control.

Carbon content is held to .12% maximum through controlled atmosphere annealing. This assures highest ductility commensurate with the strength needed in the tubing.

Superior (SAE) Hydraulic Tubing is made from selected billets of non-aging steel. These are segregated by heat numbers, and a customer's order is always filled from one heat. This assures complete uniformity of all the tubing shipped to him in that order.

Each order also undergoes many critical examinations. Among these are checks on elongation, yield and ultimate strength. Every length is also 100% hydrostatically tested to maximum working pressure. And close control is exercised over grain size and microstructure. This is done microscopically with the aid of metallographic mounts. And finally, if requested, we furnish a notarized report on the chemical and physical properties of the tubing produced.

Superior (SAE) Hydraulic Tubing is furnished in dead-soft annealed temper for easy bending and flaring. Order in cut, multiple or random straight lengths up to 30 ft.—or longer in coiled form.

For more data on our (SAE) hydraulic tubing, get a free copy of Bulletin 39. Write Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

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Baker Perkins builds efficiency and morale, as . . .

Job Check Cuts Costs

CHECKING work standards on the job helped Baker Perkins Inc., Saginaw, Mich., boost departmental efficiency from 67 to 87 per cent in six months and save $82,000 through increased productivity. The company builds made-to-order mixers and industrial equipment for chemical, food, and bakery industries.

No Incentives—R. C. Reider, BP's works manager, says World War II controls killed off a company incentive program in 1943. "After the war we reset our standard data on a measured-day work system, but we were unable to re-establish the incentive system," says Mr. Reider.

Production costs outran estimates. The sheet metal and plate shop, which requires a lot of manual work, was hardest hit.

Costs Soared — Because most Perkins' jobs are special orders (Mr. Reider likens the firm to a king-size job shop), the preset standards on routing sheets never quite fit each order going through the shop. Customer requests for on-the-job changes didn't help, either.

Performance reports which might indicate where standards should be changed were seldom available until the job was finished. Without incentives, workers had no desire to try to meet existing standards. Confesses Mr. Reider: "We had standards, but by the time we found out how far off they were, the job was gone and it was just too late."

Sought Help—Two years ago the company called in a management consultant firm, A. T. Kearney & Co., Chicago. Robert S. Smith, Kearney representative, confirmed BP's suspicions that the greatest weakness lay in the control area. "To provide an effective work measurement plan to control performance we had to obtain production data by some more accurate means than by routing cards," explains Mr. Smith.

Found Answer—The solution was to use floor checkers from the time methods department to record operations performed on each job for comparison with preset standards on the work orders. One checker was assigned to every 30 men on the day shift. Mr. Smith says this technique previously had been used in measuring performance of maintenance operations.

By working in the shop, the checkers can pinpoint operations that require more or less time than the preset standards call for. Job cost estimates can be corrected immediately. As revised standards are established, master process sheets in the time methods department are changed so correct standards can be applied to similar jobs in future.

Efficiency Climbs — On the job checking reveals time consuming operations, giving departmental foremen and production engineers a chance to improve methods. Weekly reports can be compiled to show management exactly how jobs are progressing through the shop. This aids in job scheduling and materials inventory flow.

Morale Improves—The company has gained some benefits of an incentive system because weekly performance ratings for each worker are posted on shop bulletin boards. As Mr. Reider puts it: "Nobody likes to be last."

These improvements in morale and efficiency make Mr. Reider declare: "If you can have a good, sound measured-day work system you're getting the efficiency you need without an incentive program."

System Spreads — Baker Perkins initially set up its standards checking system in the sheet metal and plate shop. Since then it has been adopted in three other departments and is scheduled for wider company use.

Payrolls Go Up, Up, Up

Iron and steel average hourly payroll costs hit a record high of $3.25 in July, reports the American Iron & Steel Institute, New York. Wage increases in that month pushed the average 14 cents above June levels.

Pensions, social security, and insurance payments add an average of over 33 cents an hour to these statistics.

Total payroll of the industry was $267.5 million in July, compared with $266.1 million in June. The workweek dropped from 35.5 hours in June to 32.4 hours in July. Employment dipped from 510,828 in June to 508,876 in July (including hourly and salaried workers).

Types of Business Life Insurance Carried by Metalworking Plants*

	Per cent of Plants	Number of Plants
Life insurance to preserve PARTNERSHIP VALUE when death comes to any partner	3.7	577
Life insurance to preserve SOLE PROPRIETORSHIPS for heirs or selected employees	3.2	499
Life insurance to preserve ownership values when death comes to any stockholder in a CLOSELY HELD CORPORATION	35.3	5509
Life insurance to indemnify the firm for the death of a KEYMAN	42.8	6679
Life insurance for business purposes other than shown above	2.7	421
	**	

*63.6 per cent of metalworking plants employing 20 to 100 people carry some kind of business life insurance.
**Total equals more than 63.6 per cent because some respondents mentioned more than one type of insurance.
Based on 187 plants responding to a STEEL survey.

Will Your Firm Die with Its Keyman?

Business life insurance can cushion the blow when a company, particularly a small one, loses its most important officer. Insurance can do other things too. Here's how

JOHN BROWN is dead. He left his stock in John Brown Tool & Die Corp. to son Jack who has been active in the business and is expected to carry on.

But taxes on Mr. Brown's estate are so large that stock has to be sold to pay them. Who will buy it? Jack and other stockholders can't afford to. It goes to an outsider. Result: Jack has a smaller proprietary interest in the corporation than his father wanted him to have, and an alien among the stockholders may result in trouble.

Insured—Business life insurance could have prevented all that. As the accompanying exhibit shows, four major types are carried by metalworking plants. Since insurance to protect a firm for the loss of a keyman and insurance to protect the closely held corporation when death comes to a stockholder are the two most common types in metalworking, we'll deal principally with those two.

In fact, the two are often combined, particularly when the object is to keep ownership among those active in the management of the firm.

Protection—Here are three ways insurance on Mr. Brown's life could be used:

1. Insurance in favor of Jack who can use the proceeds to buy the stock from the estate.

2. Insurance in favor of other stockholders who, likewise, can use the proceeds to buy the stock from the estate.

3. Insurance in favor of the corporation, which will use the pro-

ceeds to buy some of the stock from Mr. Brown's estate and will then retire the stock. The third approach is preferable (and is truly keyman insurance) because of a tax advantage. Section 303 of the Internal Revenue Code of 1954 says an estate can have stock redeemed without the payment being taxed as a cash dividend provided the proceeds are used to pay death taxes and funeral and administration expenses and provided the stock the decedent owns amounts to more than 35 per cent of his gross tax estate.

Comparison—If there had been no insurance and the stock had gone to an outsider, here's what would have happened (assuming that Mr. Brown owned 500 of 1000 shares, Cousin Ned owned 300, and Cousin Tom owned 200, and that the estate had to sell 200 shares to raise cash):

	Shares	Interest
Cousin Ned	300	30%
Cousin Tom	200	20
Son Jack	300	30
Outsider	200	20

But if the corporation redeems the 200 shares, then only 800 will be outstanding and this will be the lineup:

	Shares	Interest
Cousin Ned	300	37½%
Cousin Tom	200	25
Son Jack	300	37½
Outsider	0	0

Coverage—The closed corporation can be protected even if Mr. Brown had no son already familiar with the business. If he were childless or had no children interested in the corporation, provision could be made in advance with Cousins Ned and Tom to have an insurance plan to redeem the stock in the Brown estate. Ned and Tom keep control; the Brown heirs have money to pay death taxes and to invest in what interests them.

In both this case and the one where Son Jack must sell some of the stock to pay taxes, two things are essential:

1. The preparation of a binding buy-and-sell agreement committing surviving stockholders, or the corporation, to purchase the interest, or part of it, of any stockholder who may die. This agreement would set a value on each member's interest, to be adjusted annually or to be figured on the basis of a formula.

2. The creation of a fund in the amount of the stockholder's interest as named in the buy-and-sell agreement. Business life insurance is a common way to create the fund.

How Much? — How much insurance should be taken out? If the only consideration is the redemption of stock, then all that's needed is enough to cover the estimated value. But additional considerations turn up for keyman coverage. How badly will the corporation be hurt at the loss of the keyman? Is a salary deferral plan involved? And, of course, does he own stock to be redeemed?

So, the insurance to be carried on the keyman varies from case to case, but it's roughly five times his annual salary. Let's say a 40-year-old keyman makes $30,000 annually. His company should carry $150,000 in insurance on him, as a rule of thumb. That would cost the company $3468 a year in premiums, says George B. Chapman Jr., Aetna Life Insurance Co.'s general agent in Cleveland.

Other Uses — Besides keeping a closed corporation's ownership with the surviving owners, keyman insurance can provide at least three other benefits:

1. Provide a financial cushion until a new keyman can be developed.

2. Make a top executive want to stay on the job.

3. Get credit through improvement in the financial position of the company.

Make Him Stay—Suppose an upper bracket man receives a raise of $10,000. How much does he take home (assuming he has just enough outside income to offset his exemptions and deductions)?

The accompanying table shows that straight salary increases aren't the answer. But a deferred compensation arrangement (funded through business life insurance) would give the executive tax benefits and longer security.

Assume a 50-year-old man receives $50,000 annually. Here's a proposition: Take a salary of $40,000 yearly for the 15 years until he retires, with a guarantee of $10,000 annually to him or his beneficiary for 15 years more. The reduction in straight salary costs him only $2920 a year if single and $4220 if married. He is assured of a substantial income for himself or his dependents for an additional 15 years of retirement. On those figures, an unmarried executive would save $69,660 in taxes on the deal (taking into account the extra over-65 $600 exemption).

Credit and Insurance—Keyman insurance helps a company's credit, too, because of its reserve value. It also helps credit by assuring the lender or the other party in some business deal that the keyman will remain on the job.

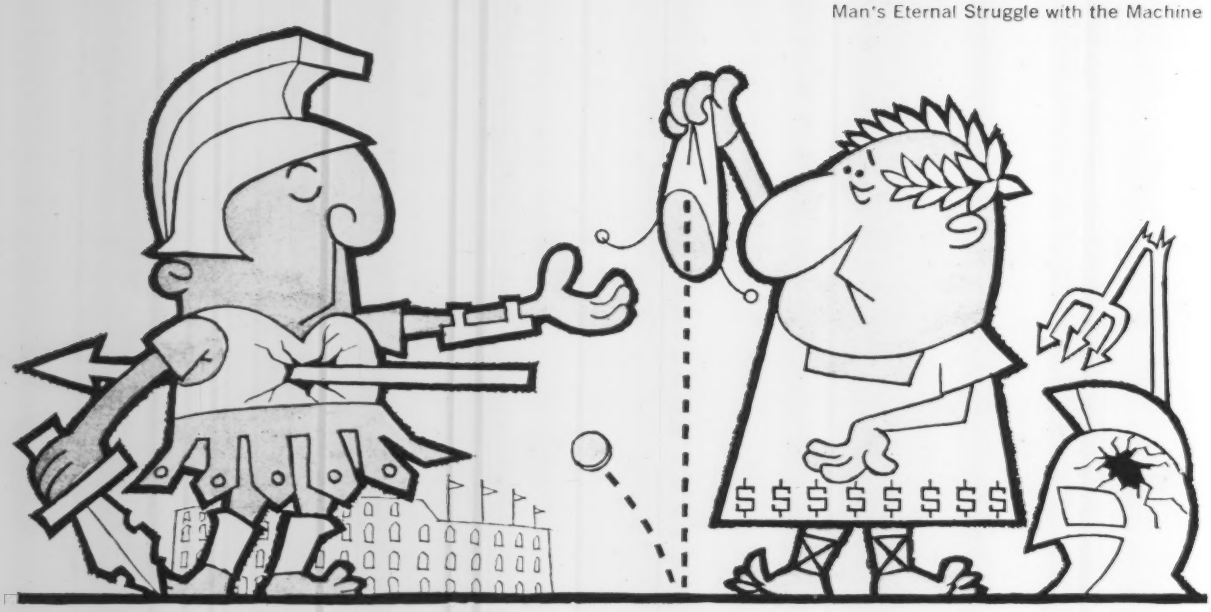
"High estate and inheritance tax levies are slowly but surely destroying the small business," believes W. T. Hackett, vice president of a Columbus, Ohio, bank. Forced liquidation and loss of keymen are the reasons. Business life insurance can cushion the blow.

• *An extra copy of this article is available until supply is exhausted. Write Editorial Service,* STEEL, *Penton Bldg., Cleveland 13, Ohio.*

How Much Is a $10,000 Raise Worth?

Old Salary	New Salary	Amount Executive "Takes Home" Out of $10,000 Raise	
		(single)	(married)
$ 20,000	$ 30,000	$4040	$5820
40,000	50,000	2920	4220
60,000	70,000	2200	3620
80,000	90,000	1600	3040
100,000	110,000	1100	2500

Man's Eternal Struggle with the Machine



WITH ALL THE COSTS OF DOING BUSINESS RISING STEADILY, PROFIT IS MORE ELUSIVE THAN EVER!

How long can the cost of "getting new equipment to work right" be buried in overhead?

No matter how attractive the original price of the equipment, it's false economy if the price tag *did not* itemize the extra money required to get it into production!

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Overhead can no longer afford the labor and hard, cold cash-money often needed to make new equipment operate properly.

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Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

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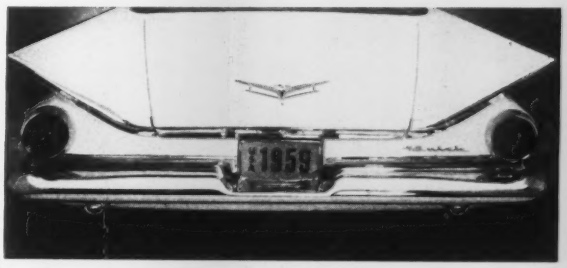
Gradual Modifications or Frequent Styling Changes?

Rambler American



Buick

Next decade's car buyers will face that question as they ask...

What Price Obsolescence?

SMALLER cars can claim 15 per cent of next year's market and may account for 50 per cent of the domestic market by the end of the 1960s, predicts George Romney, American Motors Corp.'s president. They took 12 per cent of sales in 1958.

Mr. Romney is convinced that the auto buyers who want economy more than luxury have become a large minority. And the shift in taste to the economy car is going to profoundly influence the majority who still will want the larger units with all the trimmings.

Here's Why—The styles of the smaller cars aren't changed often. So, for the first time, American buyers are going to see the high cost of annual changes for conventional autos. Will they pay for that as well as for greater size and trimmings?

Style Costs—Tooling costs for annual or semiannual styling and engineering changes are enormous. General Motors Corp., for example, reportedly has spent upwards of $840 million to bring its 1959 lines to market. Even divided among a greater number of cars, the amount spent for styling changes will be considerably more per car than American Motors has spent facelifting Ramblers. AMC's 1959 tooling costs reputedly are less than $40 million. It will have no difficulty keeping prices competitive.

Because they are subject to few annual styling changes, cars built on the Rambler theory will maintain a high trade-in value. That's not too apparent yet because, until this year, most persons felt Rambler would fail—in which case used Ramblers would have little market value.

Here's Proof—Used car auction prices indicate that 1957 and 1956 Volkswagens in similar mechanical condition and with comparable mileage vary less than $50 in price. Currently, the average price differential between all 1957 and '56 cars sold at auction is $417, says *Automotive News*. The figure varies from $210 between a 1957 and 1956 Chevrolet BelAir, to $1015 between '57 and '56 Chrysler Windsors.

Some Change Helps—Staunchest supporters of smaller cars suggest such a price penalty will force other automobile companies to scrap the obsolescence theory, but Mr. Romney doesn't agree. He says: "It is clear that forced obsolescence is an important factor in product improvement, if that obsolescence is due to real improvement in the product. However, there is rising doubt that change for change's sake alone has true economic value."

Mr. Romney won't deny autodom's charge that AMC is planning to make extensive styling and engineering changes in its 1960 Rambler Ambassador and Rebel cars, but he does maintain that the "little change" approach will be continued in the American series.

But Not Too Often—Even the larger AMC cars won't be restyled oftener than every three or four years after trade-in value becomes less important in making a deal for a new car. That's vital for dealers who depend on used car turnover for much of their net profit (see STEEL, Mar. 24, p. 75). And that's one reason AMC likes to dual its dealers so salesmen can show a profit on used cars as well as on sales of new smaller cars. Some 700 of the firm's 2600 dealers also sell larger automobiles.

Can Theories Mix? — There is

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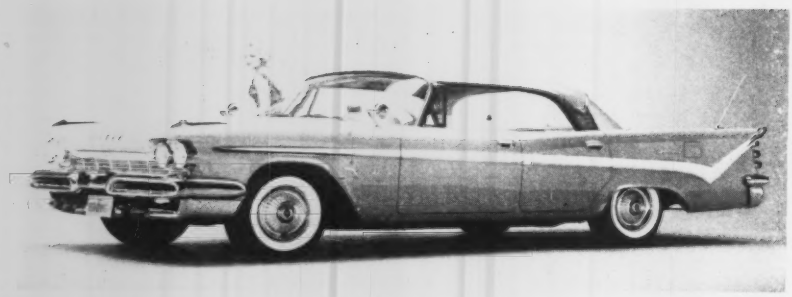

The 1959 DeSoto Sportsman Firedome features pushbutton temperature control

little doubt that when Ford and GM enter the smaller car market, they'll find styling obsolescence a hazard to larger car sales. Explains Mr. Romney: "The Big Three will be selling as much, if not more, against their own established lines as against Rambler. Furthermore, they will be selling both concepts simultaneously. From experience, we know this is a handicap."

Next year's car buyers face a glittering array of larger, newly styled offerings. Being less recession pinched, they may not be so interested in economy and Mr. Romney's theories (and Rambler sales) will be shattered. But until that happens, prospective new car owners should remember they now have a choice when it comes to paying extra for style. If smaller car builders can save enough by not restyling to cut prices, the choice will be considerably tougher.

AMC Fleet Sales Boom

It wasn't brought out at AMC's press preview, but the company will sell about 10,100 Ramblers to fleet users this fiscal year. Last year's fleet sales totaled 4000 units. One AMC executive indicates the company already has twice as many orders for 1959 fleet cars as it had in September of 1957.

Another interesting item is the hassle that developed over Mr. Romney's market predictions for 1959. Roy Abernethy, auto sales chief, indicated the company expects to sell 252,000 Ramblers next year. Later, Mr. Romney said he believes the company will take 6 per cent of the domestic market. Newsmen pointed out that 252,000 is 6 per cent of a 4.2 million market and asked if the AMC president disagreed with previous market forecasts of 5.5 million.

Mr. Romney hedged, then reluctantly said he'd go along with the 5.5 million figure, adding that he still wants 6 per cent of the market and that Mr. Abernethy's original estimate can be raised if first quarter operations justify such a move. But other company officials suggested later that the 4.2 million prediction was closer to what the company really expects. One source said: "If the industry sells 4.8 million next year, it will be doing well."

That kind of talk has cropped up at other auto companies, but it's not calculated to build customer confidence, so the 5.5 million figure remains the official prediction. Most division heads say the total includes import sales of about 400,000 units.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,090
†February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	180,313	524,354
8 Mo. Total	2,743,216	4,392,871
September		284,265
October		327,362
November		578,601
December		534,714
Total		6,117,814

Week Ended	1958	1957
Aug. 16	56,677	117,598
Aug. 23	25,918	123,130
Aug. 30	16,771	118,553
Sept. 6	12,016	90,704
Sept. 13	24,945†	85,816
Sept. 20	40,000*	52,365

Source: *Ward's Automotive Reports.*
†Preliminary. *Estimated by STEEL.

Plastic Wheel Developed

Prototypes of an inexpensive plastic wheel for tracked vehicles have been built for Canadian military forces, say members of Canada's Society of Plastic Industries.

The wheel weighs 80 lb and takes 3000 lb radial thrust. It has an over-all diameter of 23 in. The report claims the reduced weight makes for greater payloads and a lower unsprung weight which aid in crosscountry performance.

The plastic wheel is expected to cost up to 30 per cent less to produce. It offers greater resistance to extremely low temperatures than do similar metal wheels—important for military operations in arctic regions.

GE Offers Safer Headlight

General Electric Co.'s miniature lamp department has designed a built-in spotlight for lower beams of cars with only two headlights. Called the "Suburban," the headlamp is aimed so its spotlight automatically throws a longer beam along the right shoulder of the road when a driver dims his lights for oncoming traffic.

GM-Du Pont Plan Offered

A suggestion that E. I. du Pont de Nemours & Co. be allowed to keep 63 million shares of General Motors stock without voting rights has been proposed as a possible solution to last year's Supreme Court ruling that Du Pont must get rid of some of its 23 per cent of GM stock which the government claims violates antitrust laws.

The proposal recommends that individual Du Pont stockholders be given the voting rights of the GM shares—that would exclude Du Pont executives, directors, and family members.

Earlier, the government wanted Du Pont to sell the stock to its own shareholders at the rate of 4.4 million shares annually for ten years. Another 2 million shares would be sold at market prices. Opposition lawyers claim this method would flood the market with GM stock and cause a $3 million loss to 3 million persons. Another trial is scheduled to begin next month.

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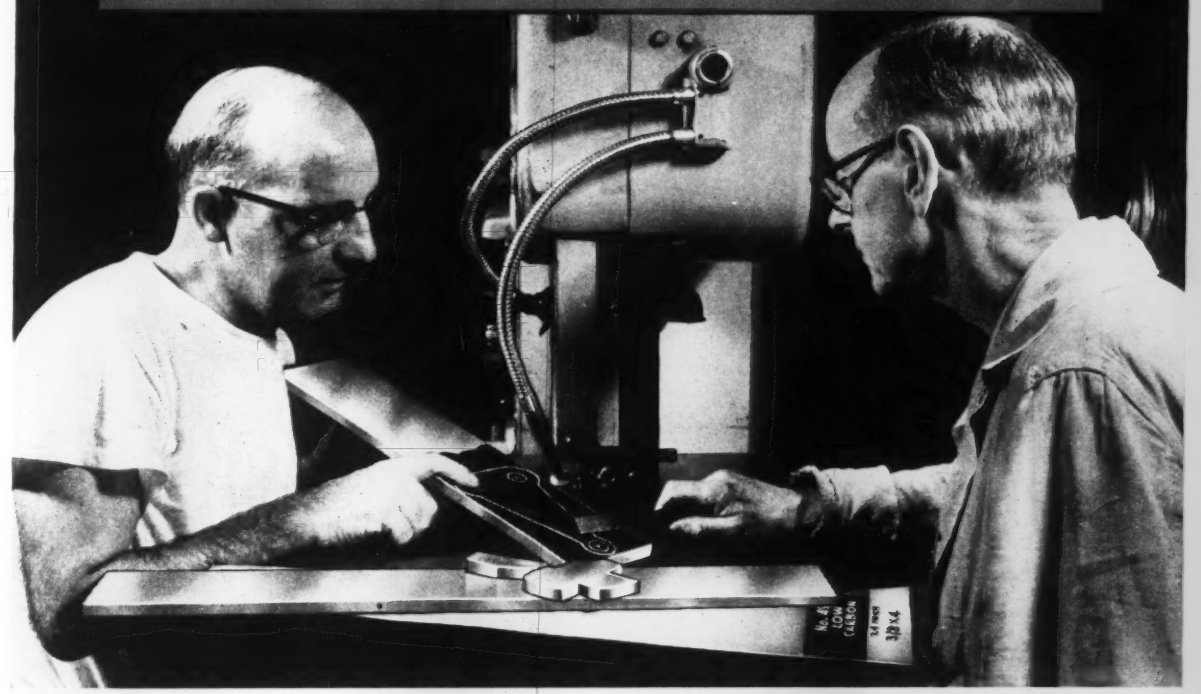

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This new fine grained, low carbon, silicon killed steel has 91% machinability — best of any flat stock. Available in 24″ lengths, 1/16″ to 2 7/8″ thicknesses, 3/8″ to 16″ widths. Can be used soft, carburized or case hardened. Each piece identified full length to avoid confusing with other steels and packaged in protective envelope.

Your nearby Industrial Supply Distributor also has Starrett tool steel Precision Ground Die and Flat Stock in three types — Air, Oil and Water Hardening. Flat stock in 18″ lengths, die stock in 36″ lengths — in over 1000 widths and thicknesses. Ask him for complete information or write for Bulletins 1109 and 1110. Address Dept. BG, The L. S. Starrett Company, Athol, Massachusetts, U. S. A.

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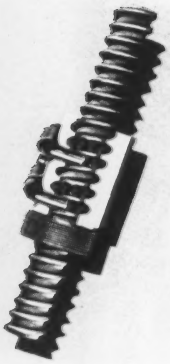
This "Screwball"* idea is paying off like crazy!



*T.M. Reg. Hein-Werner Corp.

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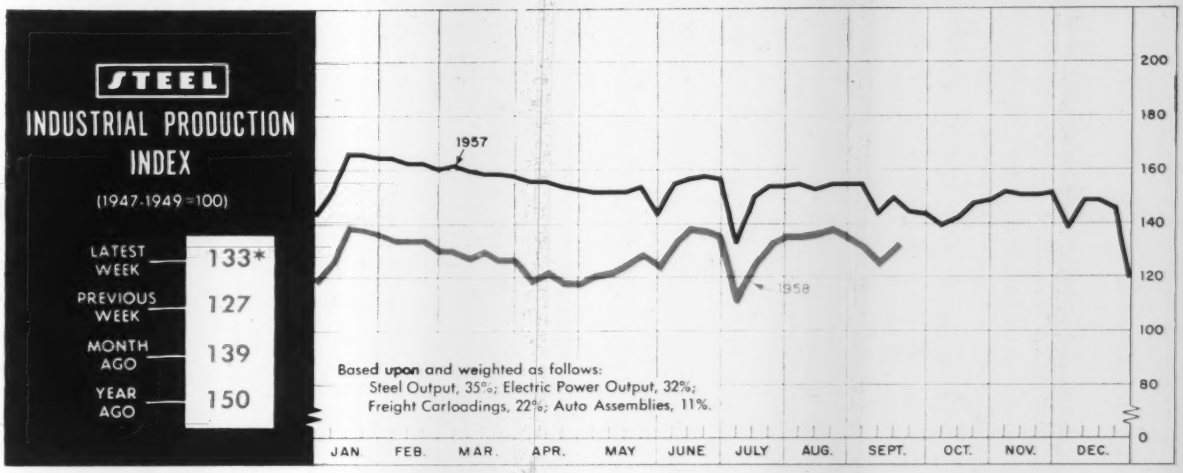

*Week ended Sept. 13.

Employment Going Up, but Lags Recovery

INCREASES in productivity brought on by the wave of cost cutting during the recession are throwing employment figures out of line as accurate business indicators. Department of Commerce statistics on labor in August would lead one to believe the recession is still bottoming out at a time when business trends are slanting sharply upward.

It looks like the economy will have to rise well above previous high points before records for employment are broken — meaning that unemployment may continue to be one of the biggest points of contention among labor, management, and government through 1959 and possibly into 1960.

Biggest Lag—The Federal Reserve Board pegged industrial production (seasonally adjusted) in August at 137 (1947-49=100), up 2 points from the revised figure for July. Since the low point in April (126), production has regained almost 60 per cent of the recession loss of the preceding eight months. During the same period, total employment regained only 50 per cent of its recession loss.

But the real story behind the statistics lies in the area of manufacturing employment, which has managed to recoup only about 21 per cent of its loss. When industrial production was at its all-time high in December, 1956, the nation's factories employed 17,159,000 persons. By August, 1957 (the last peak before the recession), that figure had slipped to 16,955,000. By April of this year, manufacturers' payrolls had dropped to 15.1 million. Commerce reports that last month the total had inched up to 15,489,000, but that is still 1.5 million short of the year-ago mark.

Metalworking Off—Workers in metalworking industries not only suffered the most severe cutbacks during the recession but they also are the last to feel the recovery. As the graph on Page 56 shows, the number of production workers in the five leading metalworking in-

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,797[1]	1,780	2,101
Electric Power Distributed (million kw-hr)	12,200[1]	12,025	11,947
Bituminous Coal Output (1000 tons)	7,025[1]	8,340	8,577
Crude Oil Production (daily avg—1000 bbl)	7,000[1]	7,060	6,821
Construction Volume (*ENR*—millions)	$360.7	$284.4	$262.0
Auto, Truck Output, U. S., Canada (*Ward's*)	32,403[1]	17,572	105,303
TRADE			
Freight Carloadings (1000 cars)	635[1]	563	741
Business Failures (Dun & Bradstreet)	191	246	208
Currency in Circulation (millions)[3]	31,433	$31,379	$31,256
Dept. Store Sales (changes from year ago)[3]	+2%	+3%	+5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	20,239	$18,152	$20,417
Federal Gross Debt (billions)	$278.3	$278.5	$273.5
Bond Volume, NYSE (millions)	$24.7	$11.2	$17.0
Stocks Sales, NYSE (thousands of shares)	15,731	11,800	9,051
Loans and Investments (billions)[4]	$94.4	$94.3	$86.3
U. S. Govt. Obligations Held (billions)[4]	$32.7	$32.5	$24.8
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	198.8	198.3	209.6
All Commodities[7]	119.0	118.8	118.1
Commodities Other than Farm & Foods[7]	126.0	126.1	125.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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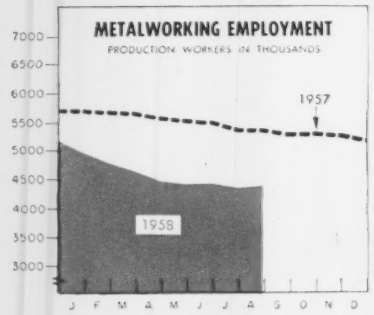
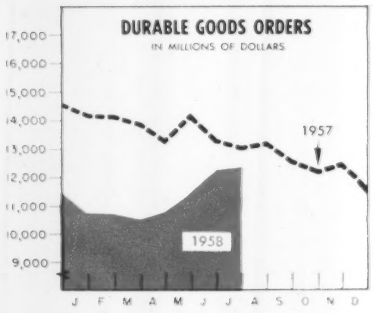
THE BUSINESS TREND





1957	Prim. Mtls.	Fab. Prod.	Mach. inery	Elec. Mchy.	Trans. Equip.
Aug.	1,079	885	1,216	860	1,352
Sept.	1,061	878	1,186	879	1,278
Oct.	1,049	889	1,166	869	1,321
Nov.	1,029	887	1,141	852	1,350
Dec.	1,006	868	1,122	824	1,342
1958					
Jan.	957	833	1,097	792	1,276
Feb.	911	800	1,072	765	1,214
Mar.	885	786	1,090	749	1,153
Apr.	849	766	1,061	729	1,103
May	840	756	1,029	715	1,081
June	859	773	1,014	716	1,084
July*	852	764	993	710	1,063
Aug.*	866	780	996	738	1,021

*Preliminary.
U. S. Bureau of Labor Statistics.
Charts copyright, 1958, STEEL.

	New Orders* 1958	New Orders* 1957	Sales* 1958	Sales* 1957
Jan.	10,704	14,176	12,646	14,941
Feb.	10,688	14,102	12,038	14,808
Mar.	11,488	13,853	11,670	14,198
Apr.	10,833	13,234	11,532	14,254
May	11,423	14,115	11,643	14,296
June	12,245	13,249	12,086	14,207
July	12,383†	13,005	12,326†	14,573
Aug.	.....	13,160	.....	14,297
Sept.	.....	12,519	.....	14,132
Oct.	.....	12,154	.....	13,932
Nov.	.....	12,434	.....	13,548
Dec.	.....	11,399	.....	13,092

*Seasonally adjusted. †Preliminary.
U. S. Office of Business Economics.

dustries has been stable since hitting the bottom in May. But both orders and shipments for durable goods have improved steadily since then (see graph and table above).

Productivity the Answer — Employment has failed to keep pace because productivity has improved. For almost two years, this measure of workers' efficiency stood still. (The average annual increase during the decade of 1947-56 was 3.9 per cent.) But during the recession, the fat was trimmed, and manufacturers found that they could turn out more goods with fewer people.

As one metalworking manufacturer told STEEL: "At our present capacity, I doubt that we'll ever get back up to employment levels of the boom, regardless of how much our order and shipment positions improve."

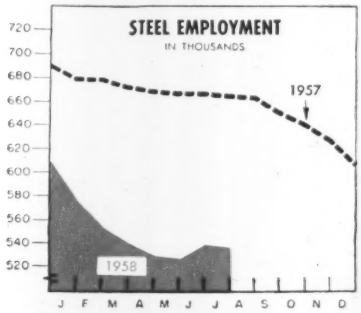
A case in point is the steel industry. During July, when the industry turned out 6.4 million tons, the payroll totaled 536,000. That's 3000 less workers than steelmakers employed in March to turn out 6.25 million tons. (See graph and table, Page 57.)

Good for '60s—While this situation may work a hardship on labor for the near future, it also means that the tremendous goals industry has set for the 1960s and beyond may be more easily met. Industry may find that one of the most valuable results of the recession will be an adequate workforce for the future.

Index Shows Sharp Upturn

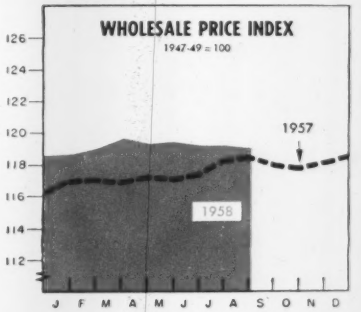
STEEL's industrial production index indicates that September will mark the fifth consecutive month of improvement since the recession hit bottom. The preliminary reading of 133 (1947-49=100) for the week ended Sept. 13 puts the index 1 point above the pre-Labor Day week mark. In the past, such a postholiday performance has usually led to a strong fourth quarter. This year the trend may be stronger than in most. The Federal Reserve Board's production index should advance at least a point or two this month on the strength of renewed auto activity alone.

In addition to last week's new model buildup at Chevrolet Div. of General Motors Corp., this week should see the start up of activities at Ford Div. of Ford Motor Co. (barring a strike). With the Big Three building up to near peak levels by October, the upturn in



	Employment in Thousands		Payroll in Millions	
	1958	1957	1958	1957
Jan.	575	678	$297.4	$360.4
Feb.	554	677	261.7	327.5
Mar.	539	671	271.8	344.2
Apr.	529	668	259.1	331.5
May	527	666	270.1	338.0
June	538	666	278.6	324.8
July	536	665	280.1	334.6
Aug.	...	663	....	343.7
Sept.	...	651	....	330.1
Oct.	...	640	....	345.6
Nov.	...	626	....	316.3
Dec.	...	606	....	299.6

American Iron & Steel Institute.



	All Commodities		Other Than Farm & Foods	
	1958	1957	1958	1957
Jan.	118.9	116.9	126.2	125.2
Feb.	119.0	117.0	125.7	125.5
Mar.	119.7	116.9	125.7	125.4
Apr.	119.3	117.2	125.5	125.4
May	119.5	117.1	125.3	125.2
June	119.2	117.4	125.3	125.2
July	119.2	118.2	125.6	125.7
Aug.	119.1	118.4	126.1	126.0
Sept.	....	118.0	....	126.0
Oct.	....	117.8	....	125.7
Nov.	....	118.1	....	125.9
Dec.	....	118.5	....	126.1

U. S. Bureau of Labor Statistics.

business indicators will be steep.

Steel mills once again last week reflected the improving industrial picture. Producers scheduled their facilities at close to 66.5 per cent of capacity, good for almost 1.8 million tons of steel. That tops the year's high point set in the previous week.

Another encouraging sign comes from the railroads. Car loadings during the Labor Day week dipped as usual, but the year-to-year deficit has dropped in recent weeks from near 20 per cent to about 13 per cent. Typical of the returning confidence in the industry is the comment of Perry W. Shoemaker, president of the Delaware, Lackawanna, & Western Railroad. "We think we're in a solid upswing for business which will bring considerable improvement in the last four months."

Profit Outlook Brighter

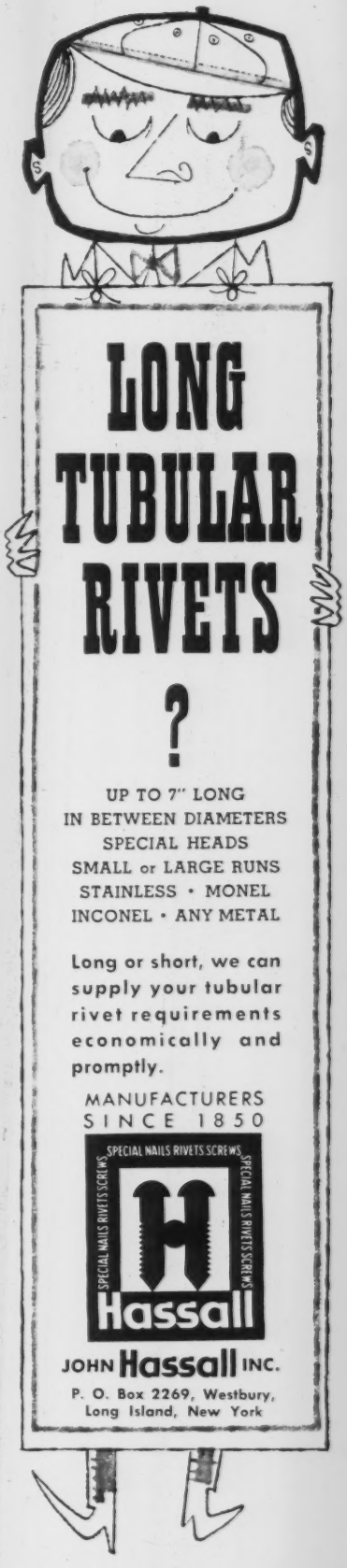
The profit picture is beginning to brighten, too. James M. Dawson, vice president and economist for Cleveland's National City Bank, assumes that production will regain its previous high during 1959's third quarter. If this happens, Mr. Dawson says history indicates profits will "rebound so sharply that total profits for 1959 would be a fourth or more larger than this year's and should match or surpass last year's. There even would be a possibility of 1959 yielding the largest pretax profits business has ever achieved."

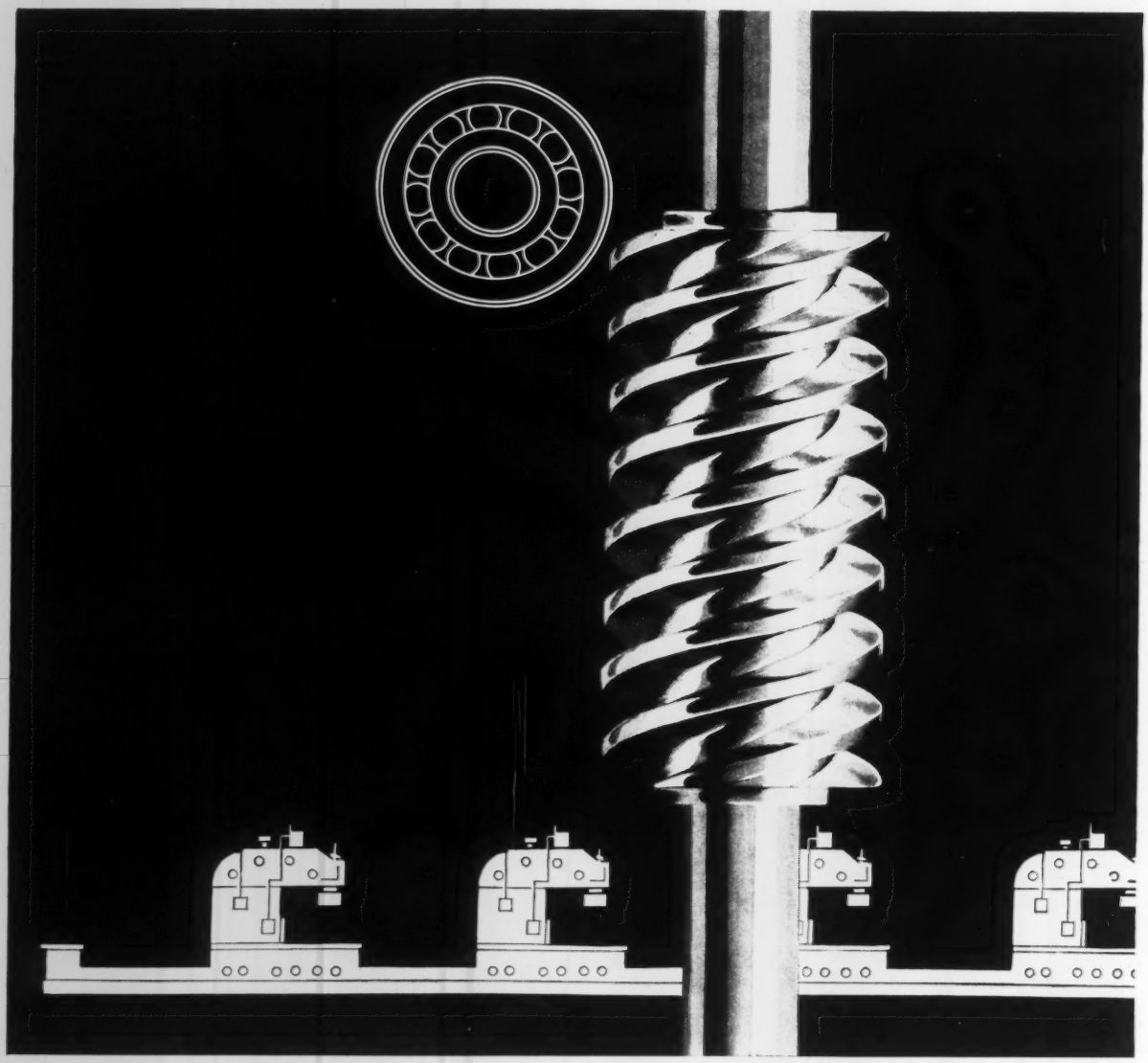
Dr. Leland I. Doan, president of Dow Chemical Co., Midland, Mich., says the recovery might carry industry to new peaks by midyear, which could accentuate the recovery in profits outlined by Mr. Dawson.

Trends Fore and Aft

• After making significant gains in June, makers of electric appliances reported another drop in output for July, part of which was seasonal. The National Electrical Manufacturers Association reported industry sales of refrigerators dropped to 279,700 units from 316,300 in June, while range sales declined from 116,800 to 98,500.

• Bookings of industrial material handling equipment showed a gain in July for the second straight month, says the Material Handling Institute Inc. At 134.34 (1954 = 100), the index is at its highest point so far this year.





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Hicks Corp. exec. v.p.

ROBERT K. MILLER
heads Holly-General Div.

THOMAS C. McCONNON
Pittsburgh Purifying div. mgr.

Irwin Koenig was elected vice president and director of engineering of **Foote Bros Gear & Machine Corp.** Chicago. He will be instrumental in product programming. Mr. Koenig previously served the company in a consulting capacity in the field of design and development.

Hicks Corp., Hyde Park, Mass., elected **Frank T. Majewski** executive vice president; **John O. Wagner**, sales manager. They were with M. W. Kellogg Co., where Mr. Majewski was manager of the rocket division; Mr. Wagner, sales manager.

John S. Jackson was elected president of **Shepard Niles Crane & Hoist Corp.**, Montour Falls, N. Y. He fills the post formerly held by **Sydney Buckley**, chairman. **Herbert Gledhill** succeeds Mr. Jackson as vice president and general sales manager.

Charles D. Manhart was elected to the new post of vice president-government relations for **Raytheon Mfg. Co.**, Waltham, Mass. He recently resigned as director of military and government sales at Bendix Aviation Corp.

Edward H. Hodgson was made sales manager, **Worm Gear Jack Div.**, Duff-Norton Co., Pittsburgh. **Howard E. Flood** was made manager, sales promotion and marketing, succeeding Mr. Hodgson.

John T. Bennett was appointed sales manager, **Gorham Tool Co.**, Detroit. He was midwestern district manager, headquarters, Detroit.

Robert K. Miller was named president of Holly-General Div., **Siegler Corp.**, Burbank, Calif. He was manager of General Electric Co.'s home heating and cooling department.

Alford H. Johnson was appointed sales manager, cutting tool and gage division, **Pratt & Whitney Co. Inc.**, West Hartford, Conn. He was in Chicago as sales manager of the mid-continent territory.

Kenneth D. Davis was named domestic and international sales manager, **Kaylock Div.**, Kaynar Mfg. Co. Inc., Rivera, Calif. **Robert H. Randall** was advanced from service manager to general manager of the Kaylock Div. **Victor Hassell** was named eastern regional sales manager.

Sheldon E. Young fills the new post of executive vice president of **Barrymount Corp.**, subsidiary of Barry Controls, in Chicago. He was general manager.

Raymond O. Oyler, general sales manager, New Departure Div., General Motors Corp., joins **Bunting Brass & Bronze Co.**, Toledo, Ohio, Oct. 1 as director of sales. **Robert R. Hirsch**, vice president-sales, will continue on special assignment until he retires in 1959.

Calumet Steel Castings Corp., Hammond, Ind., elected **E. Veselik** president; **C. J. Masepohl**, vice president.

John A. Rhoads was named director of engineering in the technical products division of **Packard-Bell Electronics Corp.**, Los Angeles.

Thomas C. McConnon was named manager of the new steel division of **Pittsburgh Metals Purifying Co.**, Pittsburgh. He will direct sales of products to alloy and tool steel producers. He was formerly with Eureka Fire Brick Co.

Robert P. Gehring was made sales manager, **Cayuga Machine & Fabricating Co. Inc.**, Depew, N. Y. He was vice president of Saginaw Welding Supply Co.

Fabricated Products Co. Inc., West Newton, Pa., named **D. A. Black** sales manager to replace **P. J. Jellison**, who was promoted to assistant to the president.

Fansteel Metallurgical Corp., rectifier-capacitor division, North Chicago, Ill., appointed **H. Paul Weirich** assistant general manager, with sales responsibility. **Glen Iaggi**, assistant sales manager, takes on additional duties of railway sales promotion and supervision of railway sales agents. **Gordon J. Elsey** was made manager of production planning and scheduling, succeeding **Elmer W. Lincoln**, retired.

Frank Mears was made consumer sales manager, industrial fastener division, **Pheoll Mfg. Co.**, Chicago. He was in charge of the Indianapolis area.

C. Horace Sanders succeeds **A. A. Burrell**, retired, as southwest district manager, Dallas, for **Cooper-Bessemer Corp.**

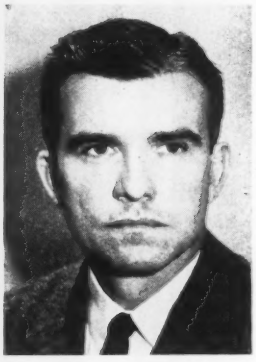
V. V. Schlosser was appointed manager of engineering at **Westinghouse**

G. FINDLEY GRIFFITHS

JOSEPH H. MYERS

executive promotions at Acme Steel

FRANK HERBATY



JAMES S. RICE

Rohr Aircraft management posts

Electric Corp.'s atomic equipment department, Cheswick, Pa.

Acme Steel Co., Chicago, elected **G. Findley Griffiths** executive vice president - commercial; **Joseph H. Myers**, vice president - marketing. Mr. Griffiths was vice president-sales. Mr. Myers was general superintendent.

James Kovacs, vice president, was placed in charge of technical sales at **Purolator Products Inc.**, Rahway, N. J. **H. C. Mouwen** was named manager of the research and development department.

Nate A. Wade was appointed vice president of **Southern Steel Service Co. Inc.**, Orlando, Fla. He will direct sales of the new Ft. Lauderdale, Fla., office.

Edward E. Kennie joined **Southworth Machine Co.**, Portland, Maine, as co-ordinator of engineering and manufacturing, Lift Table Div. He was with Continental Copper & Steel Industries Inc.

At **General Electric Co.**'s chemical and metallurgical division, Pittsfield, Mass., **Dr. A. Eugene Schubert** was made general manager, chemical materials department, succeeding **Sam L. Brous**, named marketing manager. **James W. Kaynolds**, previous marketing manager, scheduled to retire in February, was assigned as a consultant to the general manager of the division.

Newton R. Crum was made manager of the Los Angeles office of **Lunkenheimer Co. J. Paul Scherer** was made a sales representative, New York office.

Frank Herbaty was named manager of plant engineering at **Rohr Aircraft Corp.**'s main plant, Chula Vista, Calif.; **James S. Rice** was named manager of manufacturing methods. Mr. Herbaty was plant engineer at Merganthaler Linotype Co., Brooklyn, N. Y. Mr. Rice was manager of military sales, Garrett Corp., Los Angeles.

Albert C. Whitaker Jr. was appointed director of iron ore procurement, **Wheeling Steel Corp.**, Wheeling, W. Va. He was assistant director.

Thomas H. Thoresen was appointed field sales manager for **Hannifin Co.**, Des Plaines, Ill., a division of Parker-Hannifin Corp.

Earl L. Wilson Jr. was appointed eastern district manager, metal products division, **Koppers Co. Inc.**, at New York. He was sales manager of Koppers' box machinery department at Glenarm, Md.

Mark C. Lewis was made manager of the new operations research and synthesis section of **General Electric Co.**, established at Utica, N. Y., for the light military electronics department.

William G. Alexander was made assistant general manager at San Diego, Calif., for **Stromberg-Carlson**, division of General Dynamics Corp. He continues as chief engineer, San Diego facilities.

G. E. Balsley was named director of labor relations for **Kaiser Steel Corp.**, Oakland, Calif.

Gordon T. Grimstad was made sales manager, **Bendix Filter Div.**, Bendix Aviation Corp., Madison Heights, Mich. He was with Omark Industries, Portland, Oreg.

At **Jones & Laughlin Steel Corp.**'s Pittsburgh Works, **James Balph** was named supervisor-labor relations department; **John J. Felker**, assistant supervisor.

Van-Packer Co., division of Flintkote Co., Chicago Heights, Ill., appointed **Bill Henson** assistant sales manager.

George Masurat was made general superintendent of production for **Philco Corp.**'s government and industrial division, Philadelphia.

Clarence E. Simmons succeeds **Daryl L. Evans** as district traffic manager for **Aluminum Co. of America** at Vancouver, Wash. Mr. Evans was made superintendent of the traffic-shipping department, Massena, N. Y., operations.

Robert T. MacNaughton was appointed assistant mill metallurgist at **Copperweld Steel Co.**, Warren, Ohio. He had been with Crucible Steel Co.

L. K. Stringham, former vice president-engineering, Lincoln Electric Co., was named vice president of **Emerson Electric Mfg. Co.**, St. Louis.

James C. Richards Jr. was named vice president-sales, **B. F. Goodrich Industrial Products Co.**, division of B. F. Goodrich Co., Akron. He succeeds **R. V. Yohe**, elected president and chief executive officer of B. F. Goodrich, Canada. The changes are effective Oct. 1.

James C. Irwin was made resident

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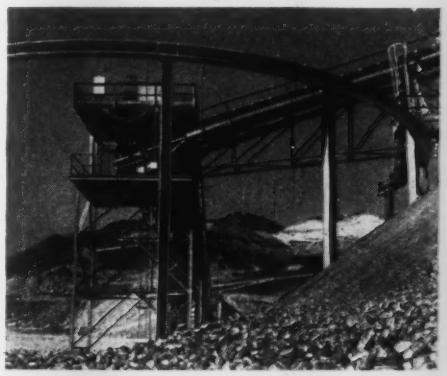

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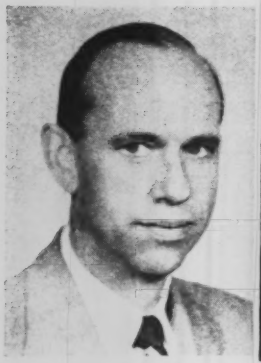
WILLIAM R. COMBER
Reynolds extrusion plant mgr.

GEORGE C. KIRKER
Western Design plant mgr.

RICHARD D. OLSON
Westinghouse Electric post



HOWARD J. EVANS
Rockwell Mfg. promotion

WARREN J. NICHOLS
Ryan Aero. materiel mgr.

WILBUR E. COMBS
U. S. Rubber appointment

manager of sales in Seattle for **Jones & Laughlin Steel Corp.**

Howard J. Evans, chief engineer, central gas products, **Rockwell Mfg. Co.'s** meter and valve division, Pittsburgh, was promoted to manager of engineering and research for all gas products. His new post includes supervision of the recently expanded engineering facilities at Rockwell's DuBois, Pa., meter division, where he has headquarters.

Warren J. Nichols, formerly assistant materiel manager at **Ryan Aeronautical Co.**, San Diego, Calif., was promoted to materiel manager. He succeeds **M. K. Smith**, now materiel director.

H. B. Korman was made sales manager, **Upson-Walton Co.**, Cleveland, to succeed the late **Edwin D. Baskin**. Mr. Korman was Cleveland district sales manager.

J. Mabon Childs and **Stephen F. Madden** were made assistant managers, steel sales division, **Firth Sterling Inc.**, Pittsburgh.

Wilbur E. Combs was appointed manager of development for the mechanical goods division of **United States Rubber Co.**, New York. He was manager of market research, Passaic, N. J., plant, where he continues headquarters.

John C. Ferguson was appointed director of industrial relations, **Superior Steel Div.**, Copperweld Steel Co., Carnegie, Pa.

Robert Steinbruch was appointed manager of contract research at **Minerals & Chemicals Corp. of America**, Menlo Park, N. J.

A. A. Milkie was made Chicago district manager, **Pangborn Corp.** He was a sales engineer, Chicago district.

Milprint Inc., Milwaukee, appointed **Fred C. Jones** industry manager of foil products.

James F. McCrudden Jr. was named New York district sales manager for **Alan Wood Steel Co.** He succeeds **William E. Bossert**, retired.

William R. Comber was made manager of **Reynolds Metals Co.'s** aluminum extrusion plant at Grand Rapids, Mich. He joined Reynolds in March. Previously he was director of engineering and divisional works manager of Mallory Battery Co.

George C. Kirker was named plant manager, Montebello, Calif., Div., **Western Design & Mfg. Corp.**, division of U. S. Industries Inc. He was chief engineer at Western Gold & Platinum Corp.

Richard D. Olson was promoted to manager of the magnetic application section, materials engineering departments, **Westinghouse Electric Corp.**, at East Pittsburgh, Pa. He was supervising engineer of the magnetic application section.

James A. Cloutier joined the Chicago sales organization of **Bay State Abrasive Products Co.** He was assigned the northern Indiana territory.

Richard C. Walter was appointed manager of the new aluminum foundry, Massena, N. Y., of **Chevrolet Motor Div.**, General Motors Corp. **John J. Debbink** was named general superintendent of production there. Mr. Walter was assistant manager of Chevrolet's production and standards department at Detroit.

C. W. Massie was made general manager, construction machinery division, **Clark Equipment International C. A.**, subsidiary of Clark Equipment Co., Benton Harbor, Mich.

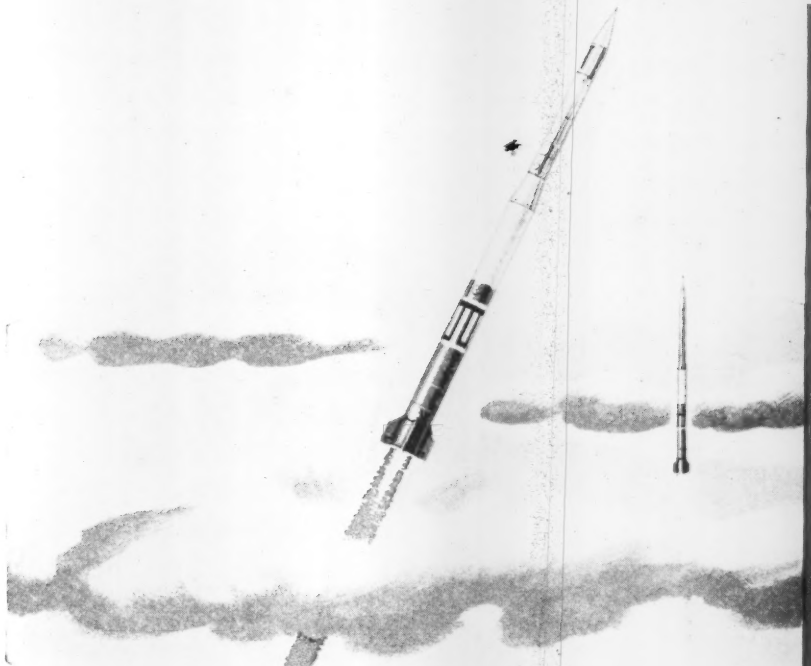
OBITUARIES...

Newton C. Swigart, 42, vice-president-purchases and traffic, **Whiting Corp.**, Chicago, died Sept. 11.

George W. Wilder, 63, general manager, **Stewart Die Casting Div.**, Stewart-Warner Co., Bridgeport, Conn., died Sept. 6.

Julian A. Leroy, 45, vice president, **Loewenthal Metals Corp.**, Chicago, died Sept. 4.

Alexander N. Aird, 55, vice president in charge of the Baltimore division of **Revere Copper & Brass Inc.**, died Sept. 7.



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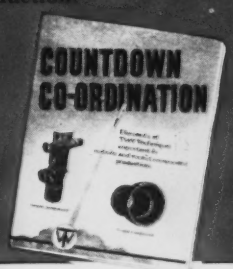

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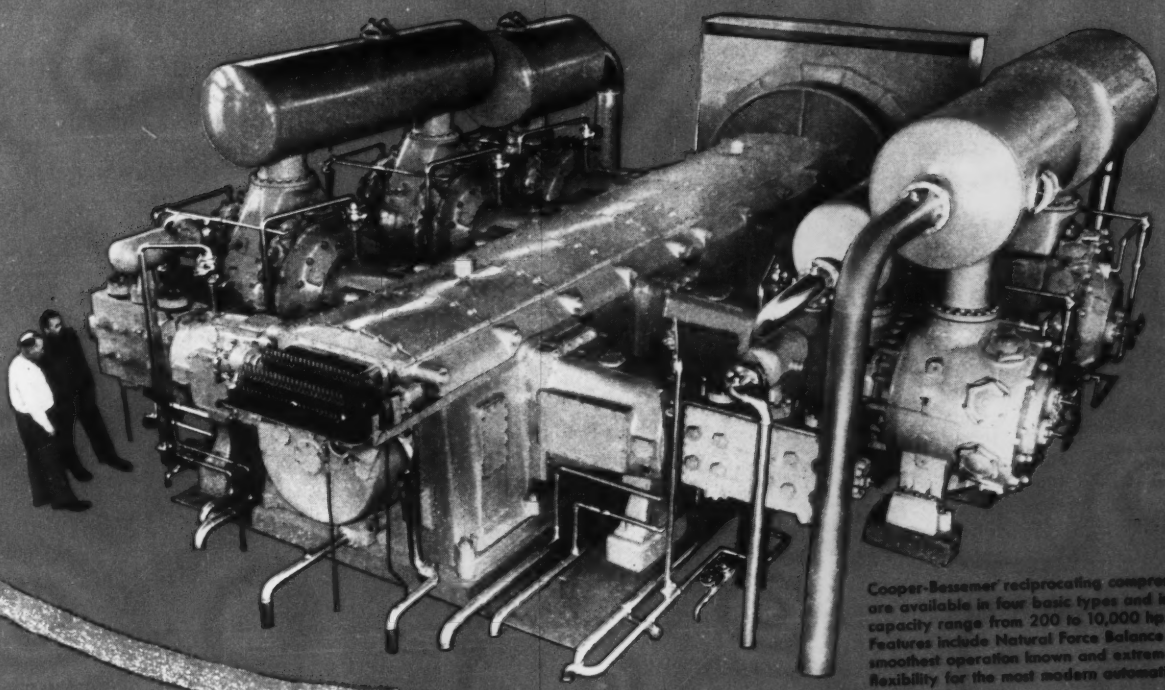
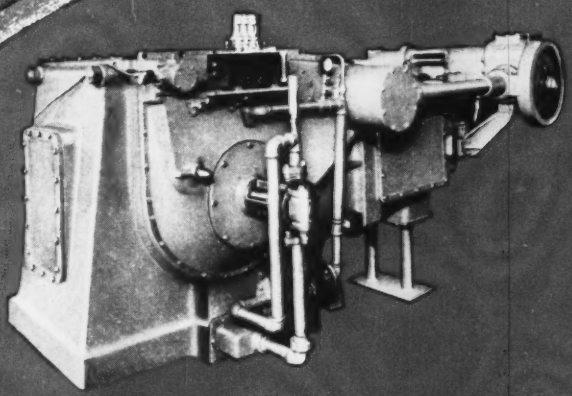
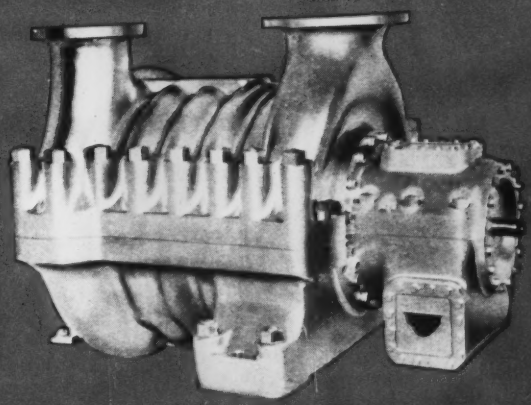
COMPRESSORS: RECIPROCATING AND CENTRIFUGAL,
ENGINE OR MOTOR DRIVEN



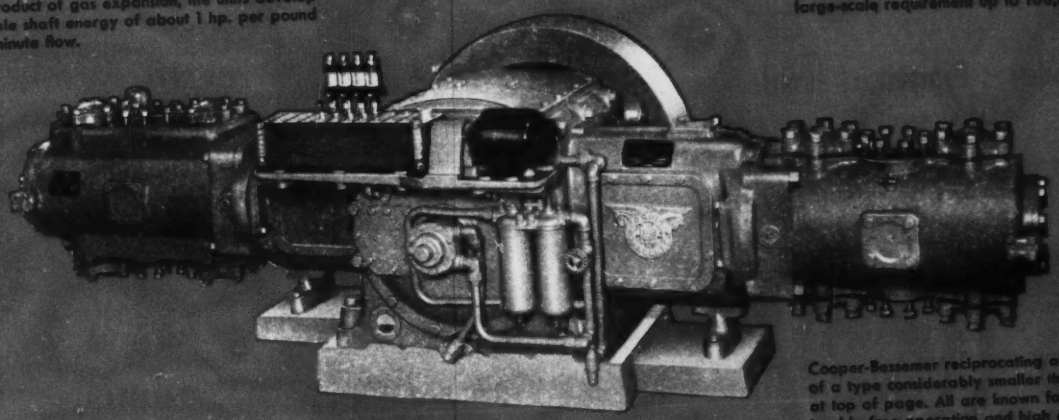
Cooper-Bessemer reciprocating compressors are available in four basic types and in a capacity range from 200 to 10,000 hp. Features include Natural Force Balance for smoothest operation known and extreme flexibility for the most modern automatic control techniques.



Cooper-Bessemer expansion engines are designed for inlet pressures up to 3000 psi and discharge temperatures to −300°F. As a by-product of gas expansion, the units develop useable shaft energy of about 1 hp. per pound per minute flow.



Cooper-Bessemer centrifugal compressors, like the reciprocating units, are offered in a wide range of types and sizes for virtually any large-scale requirement up to 100,000 cfm.



Cooper-Bessemer reciprocating air compressor of a type considerably smaller than that shown at top of page. All are known for smooth, trouble-free operation and high efficiencies.

Broadens Service

Welding electrodes matched to plates will be sold by Lukens Steel Co. on national basis

A NEW CONCEPT in steel plate merchandising has been launched by Lukens Steel Co., Coatesville, Pa. The firm offers fabricators a single source of supply for a complete range of alloy and carbon plates and a comparably complete range of electrodes.

Lukens is preparing to market its Plate-Mate welding electrodes on a national scale following a four-month sales campaign at its Coatesville and Chicago district offices. Initial sales efforts were limited while developing office routines and procedures.

The firm decided to enter the electrode field because it believed that fabricators would welcome a single source of supply for welding electrodes specifically matched to its alloy, clad, and carbon steel plates. Another consideration was that a sales force for electrodes already existed since the majority of potential customers would be those already using Lukens plates, particularly specialty steel plates.

In the four months since the introduction of Plate-Mate, sales have been in line with the original forecast for the first year, company officials say. Facilities of the electrode manufacturer permit Lukens to supply electrodes for every type of steel it makes. Electrode packagings range from 5-lb packs of stainless rods to a 750-lb payoff pack. Customer potential for the electrodes seems largest among fabricators of equipment for the petroleum, chemical, construction, and shipbuilding industries.

Produces Piggyback Loader

Railway Equipment Co., Clintonville, Wis., has been formed to make a device to load truck trailers traveling piggyback on railroad cars.

Pa. Firm Changes Name

National Forge & Ordnance Co., Irvine, Pa., has changed its name to National Forge Co. Robert O. Wilder, president, says the new name more accurately reflects the product line. The firm makes crankshafts, cast iron pipe molds, aircraft and missile parts, and heavy machinery components.

M-H Forms Finishing Unit

M-H Standard Corp., Jersey City, N. J., has formed Conveyorized Finishing System Div. to design and construct finishing techniques and equipment, emphasizing coating machinery and drying and baking ovens. H. H. Morrison, a pioneer industrial finishing engineer, will head the new division.

Hercules Gets Ilo Engines

Hercules Motors Corp., Canton, Ohio, has acquired sole U. S. distribution rights to the German-built Ilo line of air-cooled diesel and gasoline industrial engines. Hercules will market them under the Ilo name.

ASSOCIATIONS

American Institute of Mining, Metallurgical & Petroleum Engineers, New York, elected Howard C. Pyle president for one year beginning at the annual meeting in February, 1959. Mr. Pyle is president of Monterey Oil Co., Los Angeles. Dr. J. L. Gillson, E. I. du Pont de Nemours & Co. Inc., Wilmington, Del., will be president-elect. Vice presidents will be T. C. Frick, Atlantic Refining Co., Lafayette, La.; Dr. W. R. Hibbard Jr., General Electric Co., Schenectady, N. Y.; Elmer A. Jones, St. Joseph Lead Co., Bonne Terre, Mo.; and J. C. Kinnear Jr., Nevada Mines Div., Kennecott Copper Co., McGill, Nev.

Metallurgical Society of AIME elected Dr. John C. Chipman president for one year beginning at the annual meeting and Dr. Carleton C. Long vice president. Dr. Chipman is professor of metallurgy, Massachusetts Institute of Technology; Dr. Long, director of research, Zinc Smelting Div., St. Joseph Lead Co., Monaca, Pa. Chairmen will include: Extractive Metallurgy Division, Albert E. Lee Jr., American Metal Climax Inc., New York; Institute of Metals Division, Dr. O. T. Marzke, Research Dept., U. S. Steel Corp., Pittsburgh; and Iron & Steel Division, Michael Tenenbaum, Metallurgy Dept., Inland Steel Co., East Chicago, Ind.

NEW OFFICES

American Foundry & Mfg. Co. opened its new office and factory at 920 Palm St., St. Louis 7, Mo.

Luria Bros. & Co. will move its branch office from the Genesee Bldg., Buffalo, to 4446 Main St., Amherst, N. Y.

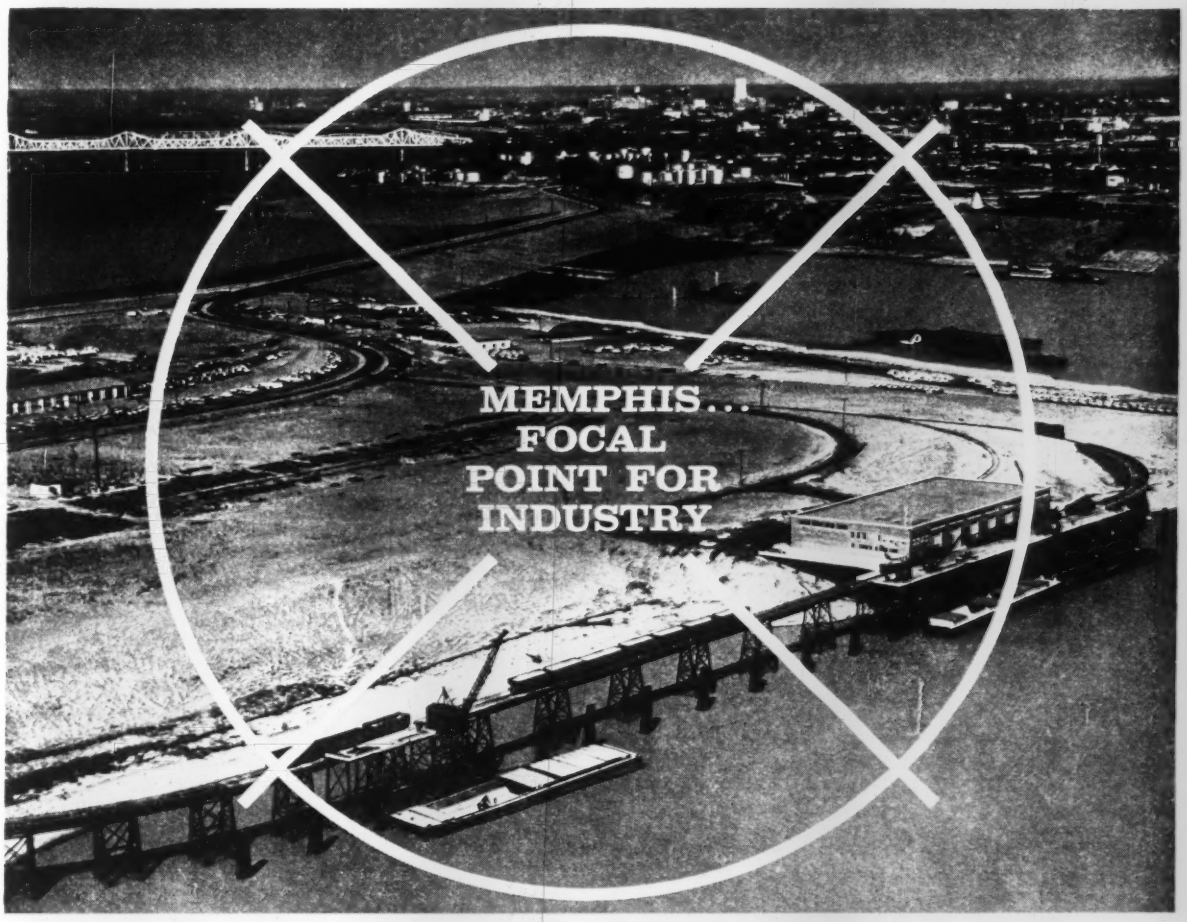
CONSOLIDATIONS

Mine & Smelter Supply Co., Denver, has merged with its subsidiary, **Colorado Iron Works**. Products of both companies will be manufactured by the parent firm. Donald J. Drinkwater is manager of the Manufacturing Div. Colorado Iron makes machinery and fabricates structural steel while Mine & Smelter makes mining machinery and distributes industrial equipment.

Chromalloy Corp., White Plains, N. Y., acquired **Propellex Chemical Corp.**, Edwardsville, Ill., and will operate it as a division. Dr. R. A. Cooley is executive vice president and general manager of the division. Propellex produces solid propellent rockets and rocket fuel, ignition elements, gas producing squibs, explosive valves, cutters, and related equipment. The parent firm specializes in the treatment of metal parts with a chromium diffusion process.

Brown-Brockmeyer Co., Dayton, Ohio, purchased **National Gear Co.**, Indianapolis. Officers of National Gear are: President, Maurice Miller; secretary, Steffen S. Brown; and treasurer, Steffen A. Brown.

Aeronca Mfg. Corp., Middletown, Ohio, established a subsidiary, Aeronca of California Inc., to purchase **Pastushin Aviation Corp.**, Los Angeles. George Ebert is vice president and general manager of the California subsidiary.



–Center of Competing River-Rail-Truck Transportation

Now a major inland port, Memphis' harbor facilities are handling over 5 million tons of cargo a year. Freight shipments are expedited through a new $1,400,000 public River-Rail-Truck Terminal, located on the above stillwater harbor and bordered by a 960-acre flood-free planned industrial development. Oil, chemical, grain, furniture, machinery and other industries are now operating from sites in this area known as Memphis Harbor and Industrial Development. They like the direct, low-cost access to markets and materials offered by Memphis' five scheduled barge lines, eight major trunk line railroads, 91 motor freight lines and eight commercial air lines.

From Memphis, overnight motor freight service is available to St. Louis, New Orleans, Dallas and Atlanta. Third morning service or better is offered to virtually every market east of the Rocky Mountains. In rail facilities, a Memphis location offers direct one-line service to 25 states. There are 60 in-and-out freight trains every day. In addition, Memphis has low gas, electric and tax rates.

Be sure you have the complete facts on Memphis before locating your new plant. Just mail the coupon.

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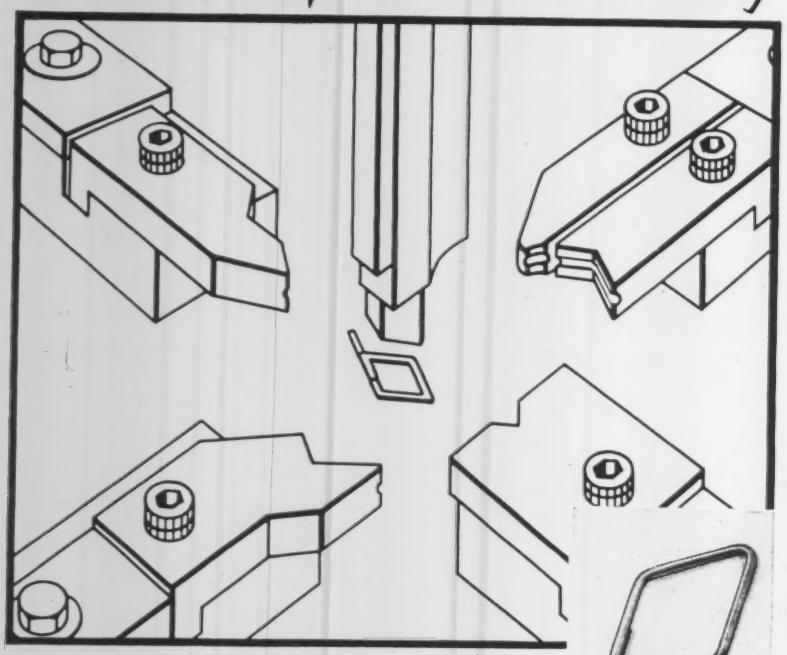
NILSON 4-SLIDES FORMING PRODUCTION PROFITS... *Automatically*



16,000 PARTS PER HOUR
on a
NILSON
***Automatic* 4-SLIDE**

PRODUCT: Deadlock Hook
MATERIAL: Soft Basic Wire
PRODUCTION: 280 Pieces Per Minute
MACHINE: No. S-0 Nilson 4-Slide

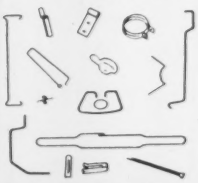
Whether your product is formed simply . . . or requires complex bending in several planes . . . a Nilson 4-Slide may be the solution to your production problems.

The sketch above shows the tooling used by a leading manufacturer to mass-produce metal hooks—at the rate of 280 pieces per minute! A Nilson 4-Slide has proved to be the most efficient, economical way to manufacture this product . . . and many other kinds of wire forms and small metal stampings.

Manufacturing costs must be kept down to meet today's competition. The combination of high speed and product uniformity—basic advantages of Nilson 4-Slides—means maximum production, minimum operating costs.

Before you design, tool, or specify manufacturing methods for your product, get in touch with Nilson. Over 60 years of experience with wire and metal forming applications can help you form better products . . . more profitably.

SIZE RANGES:
Wire up to ½" diameter
Ribbon stock to 3½" wide
Feeds up to 32"
5 TO 75 TON PRESS SECTIONS



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Coming Oct. 13

Get Ready For the New Boom

All forecasts point to great economic gains in the 1960s that may make the 1950s look like lean years. But there will be important differences between the boom of the two decades.

Industry will not be caught short of capacity, as in the early 1950s. The new prosperity will be even more competitive than that of the 1950s. The wise manufacturer will begin to plan his products, his marketing setup, his management organization, and his plant facilities to make maximum profits during the coming decade.

The tenth in STEEL's 1958 Program for Management will tell how.

Published so far in the series:

1. **Balancing Management for Profit (Feb. 17, p. 113)**
2. **Production Control for Profits (Mar. 17, p. 83)**
3. **Managing Defensework for Profit (Apr. 14, p. 125)**
4. **Building a Labor Contract (May 19, p. 125)**
5. **Pricing for Profit (June 16, p. 87)**
6. **Finding Out What Customers Will Buy (July 14, p. 101)**
7. **Surveying the Market (Aug. 18, p. 85)**
8. **Building Marketing Men (Sept. 22, p. 69)**

Extra personal copies of these Program for Management articles are available until the supply is exhausted. Write: Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

BUILDING MARKETING MEN . . .

WANTED: Profit-minded professional managers, 35 to 50, who can install and maintain integrated marketing programs in production and sales conscious metalworking companies that see the growing necessity of becoming customer-oriented. Primary responsibility: Building marketing men. Must have leadership and administrative qualifications to integrate and co-ordinate market research, product planning, sales forecasting and budgeting, pricing, advertising, public relations, sales, customer service, and distribution. Also must be expert communicators who can win the understanding and co-operation of production, engineering, and finance.

If you have such a man (he's often in general management, sales, market research, advertising, even engineering or finance), make him your market manager. He's the kind of quarterback you'll need to give your marketing team a respectable won-lost record in the booming sixties.

If such a man isn't in your company lineup now, you're in trouble on several counts:

- Without him, you'll waste time and money if you try to install integrated marketing, advise the authors of a 150-company study sponsored by the New York Chapter of the American Marketing Association (See Page 76.)
- Bringing in a market manager from the outside has a serious limitation. He "should be thoroughly familiar with the company's total operation," reminds the AMA report. (But it recommends going outside for specialists, such as market researchers.)
- Trained people are scarce. "There

Two Things Favor Small Company

TEAMWORK comes easier in a small company than it does in a large one. Here, Warren W. Brown (center), manager of sales and marketing, Superior Foundry Inc., and two of his sales engineers, Frank Morrow (left) and Frank Gerber, study marketing map while considering territory assignments

It's easy to assume that integrated marketing is a necessity the small company can't afford, but two observations by Warren W. Brown, manager of sales and marketing for a small company (Superior Foundry Inc., Cleveland) throw new light on the matter:

"The small outfit has two inherent advantages over large ones. First, communications is less of a problem. Second, the integration and co-ordination of different functions is less of a problem. Typically, a small group of department managers, headed by the president, can discuss major operations, sales, and policy problems, and make decisions in these all-important areas."

Another misconception is that the feasibility of training has something to do with the size of a company. But the most effective training tools (management development techniques) are equally available to the large and small company.

Superior has three territory sales agents, four company-employed sales engineers, and two special sales agents. Mr. Brown reports to the president and is responsible for all marketing functions, including product sales; also product development, market research, and advertising. On-the-job training is used, and informal sessions are devoted to such subjects as product information (including competitive products) and short and long term technological trends in the foundry and customer industries.

Mr. Brown and other small company marketers also take advantage of the many services offered by their industry associations, including such things as market studies and seminars. For example, such help is offered by the Gray Iron Founders' Society Inc. and the Steel Founders' Society of America, both of Cleveland.

is no reservoir of talent because we have not had integrated marketing for any length of time. They can't be trained overnight, and they can't be trained out of books," says Dr. Hector Lazo, professor of marketing, New York University Graduate School of Business. By necessity, the building of marketing men is largely a do-it-yourself project, adds Alfred Politz, president, Alfred Politz Research, New York.

- Little pertinent training information has been published. The authorities—over 40 of them—contacted by STEEL for this article were unanimous on that point.
- It takes time to get a marketing program off the ground. "Apparently, three years is the absolute minimum . . . most companies require five to seven years to develop a working organization. Greater speed seems to result in waste motion and the need to retrace," declares the Marketing Association survey.
- You haven't got too much time left. Dr. Lazo's guesstimate: "Companies that have not set up integrated marketing by 1960 will be so far behind the parade that they will be forced into it, or forced out of the competitive race. By 1965, I believe integrated marketing will be as commonplace as mechanized production."

It's already paying off handsomely in a number of companies. Last year Dr. Lazo asked 75 integrated marketers to list benefits they have realized. Here's the tabulation of their replies (on the basis of a return that was slightly better than 65 per cent): Better company-wide effort, 50; improved supervision of marketing function, 36; greater co-operation between departments, 35; increased profit consciousness in company, 35; more economical use of manpower, 29; greater attention to profitable marketing, 28; better effort, increased sales, 28; better information for management decisions, 25; better cost controls, 25; improved product lines, 14.

Those benefits will give you an idea of what you've been missing if your company hasn't developed a professional quarterback for your marketing team. True, you have a lot of catching up to do, but there is one big thing in your favor:

Not all programs are hitting on all cylinders. Reason: "We have 100 per cent lip service, but only about 30 per cent application. I have heard others say the same thing," one market manager admits.

Even though some companies have not been able to make integrated marketing work, few people are disenchanted with it because of success stories like this one:

A company that had never been in the red couldn't explain why it lost $2 million in six months. It was suspected that warehousing was the problem: Dealers weren't getting

shipments on time. Management consultants trained in integrated marketing were called in. They started by investigating the entire operation, function by function, product by product. The trouble: Sales forecasting. Products were lumped into categories, mixing slow and fast movers. The information was translated into budgets which underestimated production volume for the popular products. Emergency adjustments in production kept the company from losing any more money that year. In two years, it boosted profits to $10 million.

That problem is routine for the skilled market manager and his staff—in fact, it probably wouldn't reach the problem stage in a firm that has integrated marketing licked.

What's the secret?

Getting Show on Road

The establishment of a market manager, the training of his staff, and the indoctrination of the whole company require more collective effort and time that many companies realize, suggests Eugene B. Mapel, vice president of Barrington Associates Inc., New York consulting firm. He comments: "Integrated marketing has been least effective in companies that, for want of understanding, have accepted the concept as a tonic—just the dose to build up tired blood—without practicing the organization discipline necessary to insure success."

If there are any secrets involved, the first one is this: You must build your market team from the top down. Knowledgeable companies follow this chronology in installing a program:

1. Sell the idea to the chief executive to gain his understanding and continuing support.
2. Choose and set up the market manager, which includes committing his job specifications and your marketing plan to writing.
3. Tailor your organization to fit the concept.
4. Train the market staff and indoctrinate all other departments.

The remainder of this article will follow that outline.

Start at Top

Mr. Mapel recommends: "The first step is to work with the chief executive officer to develop recognition of the practical value of the marketing concept, sound understanding of the concept itself, and the elements in its application.

"This is a most important phase because the marketing philosophy affects every phase of a company's operations. So it is wise to start with the chief executive, who is the only one who can create the marketing climate in which all later moves must take place . . . the training of marketing men must proceed in a marketing climate."

Three Definitions—The concept is

How Medium-Size Company Trains Its Marketing Men

"A 'whole' marketing man is probably always in training. I head up our program and still consider myself a student," says Frank J. Smith, vice president, marketing, Columbus Bolt & Forging Co. Mr. Smith maintains a balanced program for new and experienced employees. A look at the informal side of his trainee program will give an idea of what he means by the development of "whole" marketing men.

Trainees spend a great deal of time in other departments. When it's feasible, they work rather than observe on the theory you can learn more that way. In the working category are stints in manufacturing, engineering, estimating, metallurgy, and other production departments. They observe in purchasing, accounting, and customer service because of the nature of the work. Mr. Smith lists these advantages of observation: "They learn why the benefits we promise a customer can be delivered. They also become familiar with such procedures as pricing, delivery, and service."

Trainees are thoroughly exposed to all market functions. Several worked on a recent study of market opportunities for the types of parts made by the company. They helped edit, tabulate, and analyze returns from a questionnaire mailed to metalworking plants. They even assisted in the interpretation and reporting of returns. Another recent project: A trainee analyzed part quotations, orders, and daily call reports to obtain facts and figures pertinent to sales planning.

"Training is an investment made for the purpose of manufacturing sales," says Frank J. Smith

Here's a Treasury of Training Tips

These companies are leaders in the development of marketing men. All have outstanding formal and informal programs. Only a few of their features are highlighted here to give you an indication of the wealth of information and knowhow you can obtain by taking a look at what other companies are doing —especially the leaders

put into focus by the Marketing Association survey previously cited.

1. Marketing implies integration of all functions in moving any type goods or services from production to the final user. This is in contrast with the word selling, which usually means only getting orders and managing salesmen. In marketing, a single executive assumes total responsibility for selling and all other related activities, including such things as market research and product planning.

2. Marketing makes full use of all relevant disciplines in an integrated pattern. The occasional comment that none of the "new" marketing tools and techniques is really new is neither valid nor pertinent. Statistics, cost accounting, psychology, engineering, warehouse layout, and communications have all been used for a long time. But these disciplines are now accepted, adapted, modified, and directly integrated into the new marketing function.

3. Marketing means acceptance of precise and exacting performance standards. Total sales volume has been replaced by profitability of the operation as a yardstick. The new market manager also insists on facts and analysis as bases for decisions. Decision making by hunch is steadily declining. Finally, long range planning conforms daily actions with ultimate objectives for profits, for industry and community standing, and for ethical and public responsibility as well.

Another Definition—In his book, *The Practice of Management*, Peter Drucker brings up another key factor: "Marketing is not a specialized activity. It encompasses the entire business—it is the whole business seen from the point of view of its final result; that is, from the customer's point of view."

As you can see, the integrated concept vests the market manager with what may seem to be an amazing amount of authority. Norton Weber, vice president, Marsteller, Richard, Gebhardt & Reed Inc., spells it out this way:

"My opinion is that a market manager or market department should co-ordinate all the activities of a company in terms of finding out what the customer wants and selling it to him at a profit.

"To do this effectively, a market manager must have more than desire, ability, and knowledge. He must have authority—at least equal to that of the vice president of sales or production, for example. Preferably, he should be over them, since many of his decisions will seem at times to run contrary to the narrower interests of individual departments.

"He begins to sound like an enlightened executive vice president, doesn't he? A good guy to step into the president's job some day."

It helps to look at it this way: Review the functions of a company president. He is the communication center, the man with perspective. In this sense, he has the authority of knowledge. He is the man who is best qualified to say: "The consumers' requirements or desires will be reflected in our product and profit planning."

So, traditionally, the president is the market manager in fact. Under the integrated setup, another man is put in charge of the communication center. Because he is placed in a position of knowledge and perspective, he is qualified to relieve the president of some of his traditional responsibilities.

How often does the market manager have enough authority? A clue is offered in a study by Dr. Lazo: "Ninety per cent of the time the market manager reports to the top management officer, the executive vice president, or president."

Do you have a man who is ready for the job?

The Market Manager

Aside from the president (and there's no reason why he can't be your market manager), the executive vice president is often a likely prospect. Also, many of the responsibilities tend to gravitate toward the vice president of sales, or general sales manager. Either may be your man.

One study shows that sales personnel get the call about 30 per cent of the time, but, as suggested earlier, your future market manager may be any place in the company. First, he is in a position that gives him knowledge of the overall operation. Second, he is a professional manager, a leader and administrator.

Dr. John G. McLean, vice president, co-ordinating and planning, Continental Oil Co., Houston, calls him an artist-scientist. He has the knack of directing such artistic endeavors as personal selling and advertising copy writing, plus the ability to head up the fact-gathering network that feeds him masses of

General Electric Co.

Among the top questions in formal training are: Who should participate? What should be taught? What is the best teaching method? How can you minimize time away from the job? You can get a lot of ideas from one of GE's programs—its Advanced Marketing Management Seminar.

ATTENDANCE: A small cross section of managers participates. Titles of typical trainees: Manager-sales, Dishwasher & Disposal Dept.; manager-product planning, Clock & Timer Dept.; manager-marketing, Portable Appliance Dept.; specialist-administration, Marketing Services; general manager, Vacuum Cleaner Dept.

SUBJECTS: They include—Development and growth of marketing executives; the sales manager and his job; human problems in the development and direction of field sales managers; relations of staff and line in organization; typical human problems of headquarters executives; and dropping products from a line.

TEACHING: The Harvard case method is favored.

DURATION: The four-week course is divided into two sessions—two weeks of training, two weeks back on the job, then the final two weeks.

United States Steel Corp.

Under the integrated concept, the market man's job involves much more than his specialty: He should also know his company. Normally, such knowledge comes only with years of experience, but the process can be speeded up. Among the techniques used by the corporation are: 1. Plant tours as a supplement to classroom training. 2. Afterhours courses on a voluntary basis. 3. Cross attendance at regular meetings.

PLANT TOURS: One program (Commercial Dept. Training, a 22-week course) includes some 30 tours—and they aren't hasty walk-throughs. For example, three weeks are spent at Chicago-area facilities. Another feature: Several customer plants are visited.

VOLUNTARY TRAINING: Twice a year, each plant offers a Program for Advanced Study. (Registration fee: $5.) The corporation is the subject of one course (Commercial Management in United States Steel). It covers: "Basic facts about steel products and steel markets, market coverage, distribution, product development, pricing, commercial research, the solicitation program, traffic, and coal chemical sales."

MEETINGS: The corporation uses planned "contacts" to help spread knowledge of functions. Public relations people, for example, sit in on regular sales meetings.

Westinghouse Electric Corp.

What can you do to increase participation at formal meetings? What can be done to encourage the passalong of information after the formal meeting is over? What "depth of knowledge" is sought at formal meetings? One of Westinghouse's programs (its Marketing Management Course) covers those points.

PARTICIPATION: Classes are divided into four equal groups (about seven members each). Each has a chairman and secretary to conduct conferences and case studies. The chairmanship is rotated so that each member has the opportunity to head up a group and report group findings at least once.

FOLLOWTHROUGH: During the latter part of this two-week course, trainees are asked to draw up written plans showing how they will pass the information along to their people. They are subject to the approval of the director of marketing management training, who also makes periodic checks on followthrough after the managers return to their jobs.

KNOWLEDGE: A trainee is expected to gain enough background to sharpen his ability to evaluate marketing situations and to expand his decision-making capacity.

Koppers Co. Inc.

Say you want to set up a market seminar to introduce the integrated concept to your managers. What should be your broad objectives? What should you include in your program? You can get some valuable tips from one of Koppers' programs—its Advanced Marketing Management Seminar.

OBJECTIVES: 1. To identify and agree upon the role of marketing in today's competitive economy. 2. To analyze the critical effect of marketing on (your company's) growth and profits. 3. To gain increased knowledge of the methods and skills required to make marketing effective. 4. To take an objective look at marketing manpower requirements to accomplish goals. 5. To discuss and agree upon the responsibility for marketing results.

THREE-WEEK PROGRAM: First week—The marketing concept, marketing research, product planning, price decisions and marketing policies, market planning and programming, financial aspects for market managers.

Second week—Distribution, sales promotion, advertising and public relations, organization for selling, sales management, your integrated marketing program.

Third week—Marketing manpower, your company's manpower program, selecting salesmen, sales training, counseling, and the marketing executive.

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scientific information, which he must digest, evaluate, and use as the bases for his decisions and planning. He is also a communications and human relations expert.

Tip: Fen K. Doscher, vice president of marketing, Lily-Tulip Corp., New York, says strong sales managers are often out of their element as market managers because they are constitutionally unable to make the adjustment. They are chiefly doers, not necessarily planners and administrators.

A study by Dr. Lazo reported in *Printers' Ink* throws more light on the question: Where do market

Experts Brainstorm Market Training

Consultants Richard Burdge (left), Carl M. Smalheer, and William Zook discuss implications of statement by Mr. Justice Holmes: "We need education in the obvious more than investigation of the unknown"

STEEL asked three marketmen at Robert Heller & Associates Inc., the Cleveland management consulting firm, to explore fundamentals. Here is some of the thinking that came out of that session

- "We should never forget this fundamental: Marketing starts with the customer and ends with him—from finding out what he wants to supplying it to him. It means that all people in the company, including production, engineering, and finance, are members of the marketing team."
- "The central purpose of training is teaching others how to make their maximum contribution as a team member."
- "The salesman is a key member of the team because he is in direct contact with the customer. He can make a valuable contribution to the team effort, for example, by collecting customer facts. Say he's selling machine tools. He can get such information as how many machines the customer has, their ages, and how they are maintained."
- "Under the integrated concept, the salesman should gain a working knowledge of his company, his industry, his customers' companies, their industries, and general economic conditions and trends. In short, he should be a distribution expert, a consultant to his customers."
- "The sales forecast is one of the basic training tools. It requires (and illustrates) the necessity of teamwork because it starts as a realistic estimate of what customers will buy, is translated into budgets which guide all departments in planning and scheduling, and ultimately has an influence on company profits."

managers come from? In his sample, he found that they had been exposed to these functions: Sales, 86 per cent; advertising, 50; market research, 42; financial, 28; economics, 22; engineering, 21; staff experience, 20.

Another Secret—Some companies have been stalled in their search for a market manager because they look for supermen. A point to remember: It is humanly impossible for anyone to master all the functions incorporated into his department. At best, he is a quarterback. Like the company president or executive vice president, he is chiefly a co-ordinator and a delegator.

Next Step—After you have found your man, it is wise to proceed with extreme care. To set him up in office, you should: 1. Reduce your master marketing plan to writing. 2. Reduce your market manager's responsibilities and relationships to writing.

The definition and co-ordination of effective marketing are the primary purposes of the master plan. Mr. Mapel uses this outline: 1. State the need or reasons why company is adopting the integrated marketing approach. 2. Objectives. 3. Methods and tools. 4. Timing of program. 5. Assignment of tasks to all who share responsibility for enforcing program, plus scope and timing of reports on accountability. 6. Co-ordination with other programs to avoid conflict in purpose and timing. 7. Assignment of overall responsibility for direction and control.

The job specifications of the market manager should be drawn up in precise detail, including lines of authority, basic functions, major responsibilities, and performance standards.

Another Secret—Take your time on this phase. It also may be a good idea to use the committee approach to develop your master plan. Enlist the services of key people in all functions—marketing, finance, production, and engineering. Understanding of the plan and relationships are valuable byproducts.

The next step is also a long one:

Your Organization Plan

In most cases, market managers report to the president or executive vice president. Functions incorporated into the market department vary from company to company, but, experts agree, structure really makes little difference as long as

you are following the tenets of integrated marketing. They warn: "Don't overformalize."

A survey made in 1957 will give you an idea of functions grouped under marketing: Advertising, sales promotion, market research, and sales forecasting, 100 per cent of companies studied; sales training, 92; sales, product planning, and dealer relations, 85; economic forecasting and sales controls, 70; consumer relations, marketing personnel, and warehousing, 65; packaging, finished goods inventory, and exports, 50; transportation and deliveries, 40; pricing, 30; product scheduling, 20.

Another Secret—Some programs never get much beyond this point. The company takes on the trappings of integrated marketing (it now has a market manager, a master marketing plan, and a revised organization), but it continues to operate just about the way it always has. The baby is expected to arrive after a respectable gestation period.

It isn't that easy.

The problem: "Marketing is not a body of knowledge to be learned, not a set of techniques to be practiced, not a list of rules to be memorized. Marketing is a state of mind," advises Mr. Weber.

First, the concept must be implemented through training.

Second, it takes a great deal of time to get the show on the road—not less than three years, probably five to seven.

Training

One reason why it takes so long to develop market people is that the process is partly evolutionary. This phase is described by Wendell R. Smith, president of the American Marketing Association and vice president of Alderson Associates Inc., a Philadelphia marketing and management consulting firm:

"While all team members have important operating responsibilities downstream, they also have upstream responsibilities for participation in the development of total marketing policy, strategy, plans, and programs. In a sense, then, it may be said that functional specialists become 'trained' in general marketing management as the result of such participation."

The companies with outstanding programs catalyze the evolutionary process with formal and informal training.

Difference of Opinion—The necessity for formal training is debated by some. What they're really objecting to is overemphasis. Some companies put too much faith in sporadic, one-shot seminars for middle and upper management. Confused trainees admit privately: "The stuff is interesting, but I find that I can't use too much of it on my job." And: "Followthrough is poor. I'm told that my job is my first obligation. I have to make time to train my people, chiefly afterhours and on Saturdays."

Proper Mix Needed—The major training effort must be continuous, directly related to the job, and part of it.

Smart companies are using standard management development tools, including delegation, special assignments, and rotation.

More Secrets — Two techniques are put in the must category: 1. Write the marketman's training responsibilities into his job specifications and set his training goals in written performance standards. (See box below.) 2. Use on-the-job supervision and periodic evaluation sessions for followthrough. Two valuable byproducts result: 1. Self-development is encouraged. 2. Training is tailored to the needs of each individual. (Packaged programs aren't held in high regard.)

Here's where formal training fits into the picture: It's used for subjects that are beyond the scope of day-to-day activities, such as courses reviewing the fundamentals of management development, sales law, and finance.

Such a basic program is within the reach of all metalworking companies, large, medium, and small. Only one more element (action) is needed to insure success, says M. E. Ziegenhagen, manager, Advertising

How To Write Job Specs, Standards . . .

Two of the key tools in training marketmen are written job specifications and performance standards. Here's the approach recommended by Barrington Associates Inc.:

1. TITLE AND LINE OF AUTHORITY: State the title for the position and the title from which authority it is derived. List subordinate positions directly supervised.

2. BASIC FUNCTION: In a few words, define the "target" of all efforts.

3. MAJOR RESPONSIBILITIES: Divide the job into its essential and distinct major responsibilities. After thorough analysis, concisely state the standard of performance for each major responsibility. Use only words which have precise meaning in the minds of management and the incumbent.

4. KEY DUTIES: Dissect each major responsibility, analyze it, and reassemble it carefully into its logical makeup of key duties. Concisely state each key duty in words which clearly describe the action required.

Eight Sources of Training Literature . . .

Published information on the training of integrated marketing men is hard to come by. Perhaps the most comprehensive single article on the subject is:

- **"The Changing Role of the Marketing Function"**
  —January, 1957, *The Journal of Marketing*, official publication of the American Marketing Association, 27 E. Monroe St., Chicago 3, Ill. The project was conceived and sponsored by the New York chapter of the society. The study was written by Dr. Henry Bund, vice president and director, Research Institute of America, New York, and James W. Carroll, editor, Division of Management Methods, for the same organization.

Other helpful articles:

- **"Five Jobs for Marketing Management"**
  —October, 1957, *Industrial Marketing*
- **"Marketing: New Harness for Management"**
  —Nov. 23, 1956, *Printers' Ink*
- **"Marketing Is Management"**
  —Sept. 24, 1957, *The Sales Executive*
- **"The Marketing Manager: Who the New Executive Is and What He Will Do"**
  —Jan. 3, 1958, *Printers' Ink*
- **"Sales Managers Are Product-Minded; Market Managers are Customer-Minded"**
  —Mar. 14, 1958, *Printers' Ink*

Some helpful books:

- **"Sales Management"**
  —By Richard R. Still and Edward W. Cundiff, Prentice-Hall Inc.
- **"Performance and Development of Field Sales Managers"**
  —By Robert T. Davis, Harvard University

& Marketing Promotion Dept., Worthington Corp., Harrison, N. J. He warns: "It's easy—and all too common—to have a beautiful marketing structure that never gets off dead center. Our company has a handy admonition that goes: 'Think, organize, and act marketing.' "

Execution—Most companies use their own people to do the bulk of the training, but excellent outside help may be obtained from several sources, including articles in the business press, consultants, and industry associations. Outside courses are offered by a number of organizations, notably the American Management Association and Rutgers University.

It is universally agreed that training should not be limited to beginners. Education is regarded as a never-ending process that should be pursued as long as a man stays with the company.

Extras—Since this is such a big job involving so many different people, a great deal of time is spent on common denominator subjects.

The Cleveland Electric Illuminating Co., for example, encourages company-wide use of a problem solving formula: 1. State the problem. 2. State the solution. 3. State the assurance (is it the best way to solve the problem?). 4. State the value (is the solution worth the cost?).

Trundle Consultants Inc., a Cleveland management consulting firm, has developed what it calls a common language for management (production, engineering, marketing, and finance). It's based on the relationships of fixed and variable expenses at various levels of activity, and what they mean to break-even points and profits.

The Challenge

A lot of progress has been made, but the full potential of integrated marketing is yet to be realized. Essentially, it's a matter of developing marketing men. Dr. McLean puts it this way in the July, 1958, issue of *The Journal of Marketing*, the publication of the American Marketing Association:

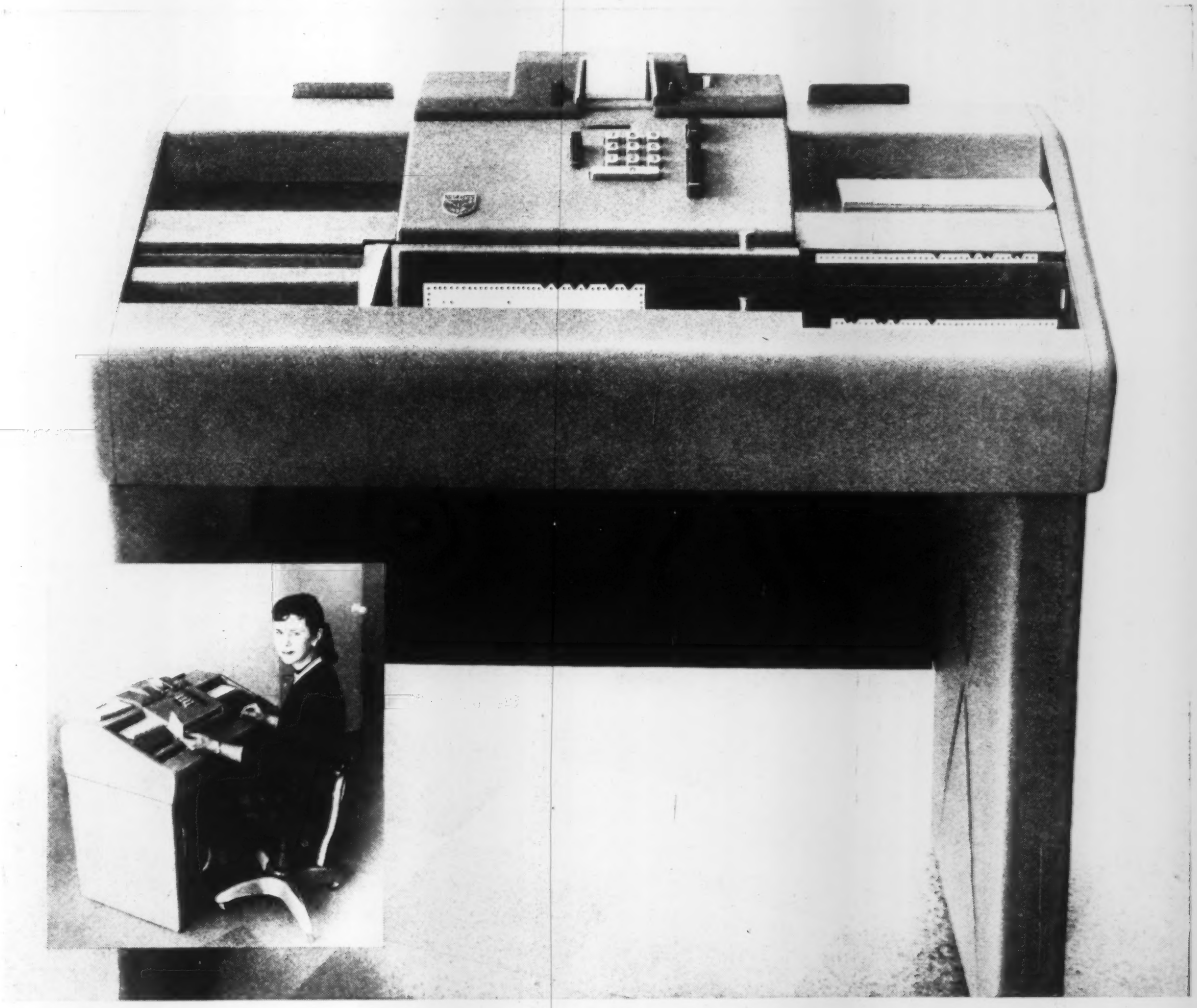
"The first problem to be faced is one of eugenics. We must do some crossbreeding in our marketing organizations. The handling of these responsibilities clearly calls for a diversity of human talents. We need men who have the personality traits and human characteristics which will enable them to do an effective job in dealing with customers and the public; we need artistic and imaginative people to create effective advertising and sales programs and to develop ideas with regard to distribution methods; and we need men with strong analytical abilities to cope with the strategic and logistic aspects of marketing operations.

"All these capacities, of course, are not easily found in any one individual. We must establish recruiting programs which will continually feed into the marketing organization at least two types of individuals: A group of 'artists' whose primary forte will be the problems of personal selling, advertising, and sales promotion, and a group of 'scientists' whose primary forte will be analysis, interpretation, and logistic planning. In time, these two streams will influence and educate each other, and out of the intermingling will come the new generation of marketing men."

Is it worth the effort?

Consider this: Manufacturing productivity is gaining about 3 per cent each year, while marketing productivity is increasing at a rate of only 1 per cent.

Royal McBee is cutting automation down to size



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Technical Outlook

TOMORROW'S FUELS— The U. S. exhibit on fusion power at the International Atoms for Peace Exhibition, Geneva, Switzerland, points up our progress toward almost unlimited power. Scientists see this potential in the oceans' heavy hydrogen: Only 1 per cent could supply 1000 times the world's present energy needs for a billion years. A unit in the exhibit raises the temperature of xenon gas to several million degrees Fahrenheit. The goal, says Consolidated Electrodynamics Corp., Pasadena, Calif., is 100 million to 400 million degrees. At that temperature, fusion would become self-sustaining.

BOILING COOLANT MORE EFFICIENT— Internal combustion engines suffer from mediocre cooling, says Dow Chemical Co., Midland, Mich. It has developed a boiling coolant that keeps upper and lower cylinder walls at nearly the same temperature, reduces wear, speeds warm-up, and eliminates cold weather problems. The firm expects an immediate market in large, stationary engines.

ZINC FOILED ELECTROLYTICALLY— A small plant now turns out 0.001 to 0.005 in. zinc foil 26 in. wide by depositing the metal electrolytically on a revolving drum. The material is more uniform, purer, more ductile, and stronger than rolled foils, says American Smelting & Refining Co., New York. Asarco claims it's cheaper than copper or aluminum and is more easily printed and soldered.

RECOVERS COAL FINES— It's easy to separate fine coal from waste slurries, says Sprout, Waldron & Co. Inc., Muncy, Pa. Its new attrition mill handles the materials now wasted in grading coal for coke ovens. Combined with oil (like kerosine), the coal forms a thin film which stays on top of a separation screen that lets clay and water pass through.

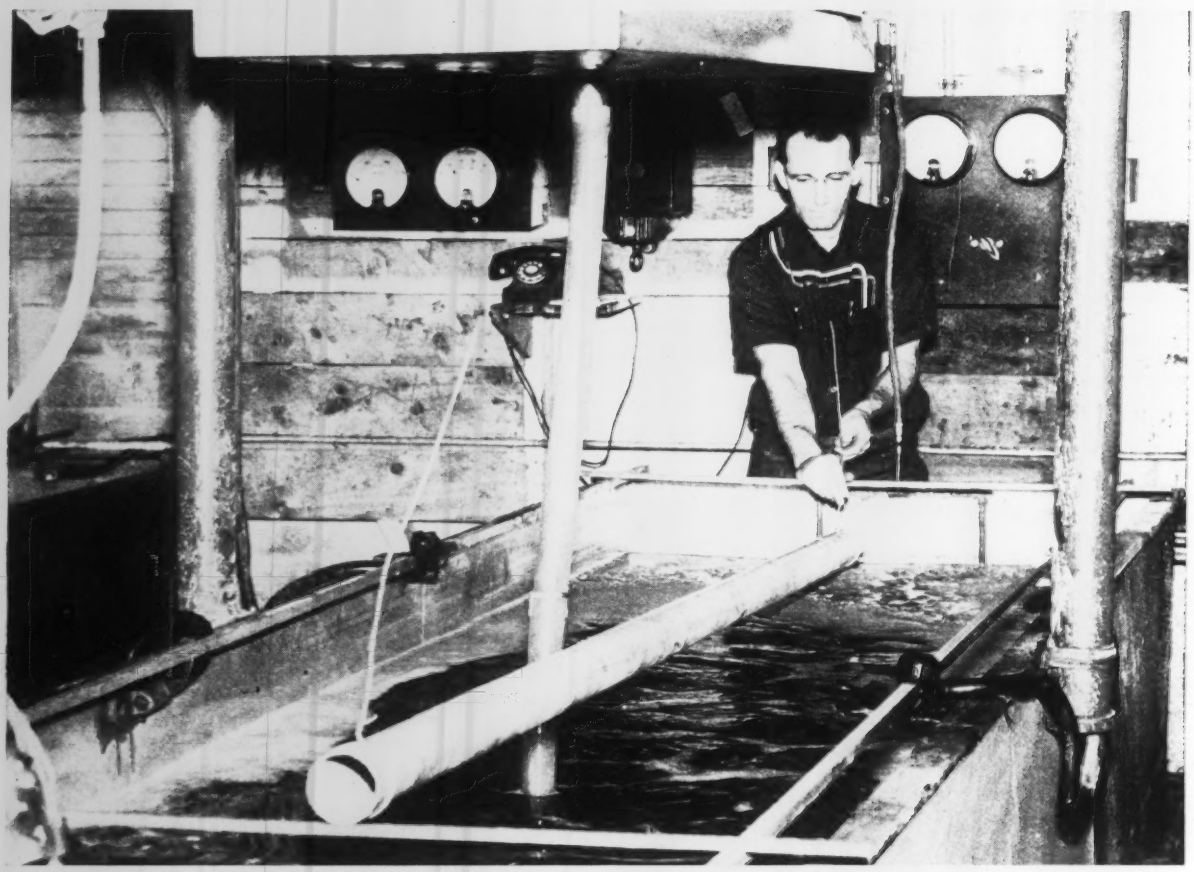
HI-TEMP MATERIAL— Silicon nitride withstands more than 3000° F for long periods in certain atmospheres, says Haynes Stellite Co., a division of Union Carbide Corp., New York. Transistor makers use crucibles of the material to melt germanium because it doesn't contaminate. Parts made of silicon nitride also work well in neutral or reducing atmospheres provided little or no stress is involved.

BETTER ROCKET WELDS— Rocketdyne Div., North American Aviation Inc., Los Angeles, finds that portable magnetic particle inspection is satisfactory for welds joining rocket thrust chambers. Permanent magnets form a field for iron oxide powders which show up any voids, inclusions, or cracks as irregularities in the flow pattern. The earlier x-ray method slowed production.

CONTINUOUSLY CAST BRONZE— Riverside-Alloy Metal Div., H. K. Porter Company Inc., Pittsburgh, has perfected a technique for continuously casting phosphor bronze bridge plates. The method is said to eliminate blowholes, porosity, cracks, and other defects. The plates can be made in several compositions. They absorb the expansion and contraction of supporting structures.

LICKING HYDROGEN EMBRITTLEMENT— Research for the armed services has turned up an efficient, economical way to minimize hydrogen embrittlement in cadmium plated steels, reports the Department of Commerce. (Case Institute of Technology, Cleveland, which developed it describes the method in a pamphlet, PB 131654.) It is expected that designers and engineers seeking maximum corrosion resistance without susceptibility to brittle delayed failure will find it an answer to many problems.

TIPS ON COMPUTER USES— Battelle Memorial Institute, Columbus, Ohio, reports on a computer which controls automatic mixing and weighing machines. It measures amounts of several materials in a batch and changes the proportions to fit variations in color, temperature, and sales. The research organization also has some suggestions for prospective users of computers: 1. Carefully list the things you want to do. 2. Study the kinds of data or information you expect to handle. 3. Select the right kind of equipment (several types are available). 4. Find out how much it will cost to buy and operate. 5. Most important: Compare costs with those of other methods in doing the same job.



Processing tank for electrochemically finishing aluminum at Sanford Process Co. Overhead unit in center is refrigerator that cools electrolyte

New Hard Coat for Aluminum

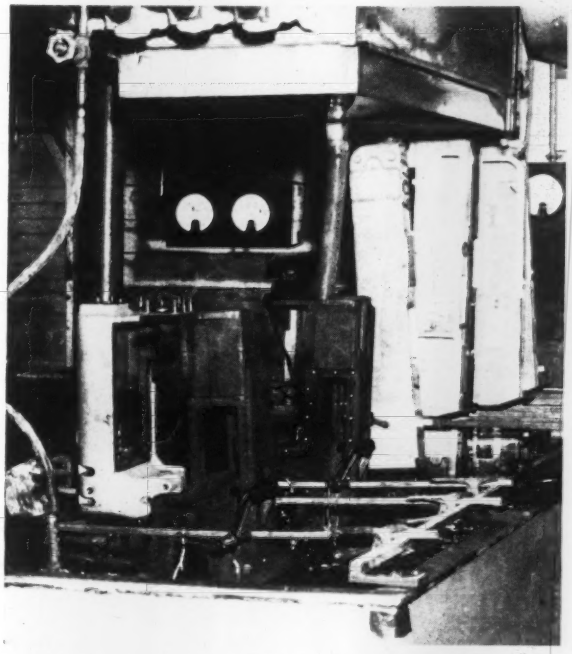
It costs slightly more than conventional anodizing, but has better wear and heat resistance. The electrochemical method can deposit coatings more than 0.006 in. thick

OVERMACHINED aluminum parts are being reclaimed and other products improved by a new electrochemical finishing method that produces extremely tough oxide coatings of high dimensional accuracy.

Developed by Sanford Process Co., Los Angeles, the coatings differ from older anodic finishes in two ways: They may have thicknesses ranging to more than 0.006 in. They are ceramic structures which provide excellent resistance to abrasion.

The coatings cost about 40 per cent less than hard chrome plating and slightly more than conventional anodizing, states Sanford.

Wear Resistance High — Some parts are deliberately fabricated undersize to take advantage of the wear resistance of the new finishes. Experience has shown that if such coatings are applied to aluminum pistons for racing cars, the pistons will be in good condition after 40 races. Ordinarily, aluminum pistons must be replaced after every third race.



Batch of parts has undergone the same finishing cycle, but have varying hues due to differences in alloys

Workers dip aluminum part in molten thermoplast to mask surfaces which do not require the hard coating

Despite wear resistance comparable to that of hardened tool steels, the coatings are not extremely brittle. Sanford says they bring about an increase in the mechanical strength of aluminum components.

Used in Electronic Gear—A Los Angeles manufacturer of electronic equipment uses the coatings on forms for coils. The coated forms have enough dielectric strength for insulation up to 4000 volts. They also are lighter than previous forms because they don't have to be covered with insulation materials.

Aircraft manufacturers say that parts with the new finishes have greatly increased heat resistance and can even withstand occasional flame impingement.

Tests conducted by a government agency to determine the relative ability of the coatings to prevent corrosion indicated resistance to more than 13,000 hours of salt spray. Conventional anodic films can take similar testing no more than 250 hours.

Highlights of Process — Before processing, aluminum parts are cleaned and masked much the same as for electroplating. They are suspended in a stainless steel tank which contains a mixture of mineral and organic acids.

The electrolyte is chilled to temperature of 0 to 15° F (by circulating it through a refrigeration unit) so it will not attack the parts.

With parts serving as anodes and the stainless tank acting as the cathode, 15 to 150 volts are applied to the electrolyte to produce a "heat factor." This enables the organic acids to distribute current evenly and separate metallic ions which are taken into the solution when aluminum is dissolved by mineral acids.

The lifespan of the electrolyte has not been determined, but one solution in use has met daily production requirements for more than 11 months without showing signs of exhaustion.

Processing tanks are welded steel structures with capacities ranging up to 8900 gallons. The current required to operate each unit depends on the amount of work being processed. Each square foot of work requires 15 amperes of current.

Thickness Is Uniform—Coating thicknesses are accurately controlled by limiting the time during which parts serve as anodes in the electrolyte. Ten minutes of processing time will produce an 0.0005-in. coating; 55 minutes will yield an 0.006-in. coating.

Thicknesses throughout the part are uniform because aluminum oxide is an electrical insulator which equalizes the buildup of materials on all deposition surfaces. The internal and external surfaces of aluminum tubes more than 10 ft long have been uniformly finished by the process.

After parts are removed from the electrolytic finishing bath, they are rinsed in cold water and dried. The coatings are relatively porous and may be used without further processing as primers for paints. If no supplemental finishing is specified, the aluminum oxide finishes are sealed by soaking them for an hour in hot water.

Colors Vary—Thin coatings produced by the method usually have a light amber hue. Heavier coatings have a variety of colors, depending on the alloys that comprise the parent metals. Examples: Heavy coatings on 7075 alloy stock may be brown; on 6061 stock, black; on 2024 stock, blue.

Handling System Trims Sash Cost

OLD METHOD

Incorporating the needed flexibility to handle a wide range of parts, this manufacturer got his investment back in less than nine months. The article is one of the top entries in the Cost Crisis Awards Competition. Watch for another entry next week

NEW METHOD

How It Paid Off

	Before	After
Bar loading and unloading	$ 982.40	$200.00
Shipping and receiving	688.00	344.00
Vent and sash handling	317.73	150.00
Overtime	951.00	———
Part-time help	1024.00	———
Totals	$3963.13	$694.00

THE JOB: Produce six major lines of industrial and commercial steel and aluminum sash, with an average of 30 standard sizes in each line. Also, manufacture custom sizes and styles.

That's the production challenge at Bliss Steel Products Corp., East Syracuse, N. Y. The variety demands complete flexibility in production, handling, and storage.

Old Way—A press operator cut standard sash bar lengths to size, put them on a hand truck, moved them to the stationary stock rack and transferred the bars by hand from the cart to the rack.

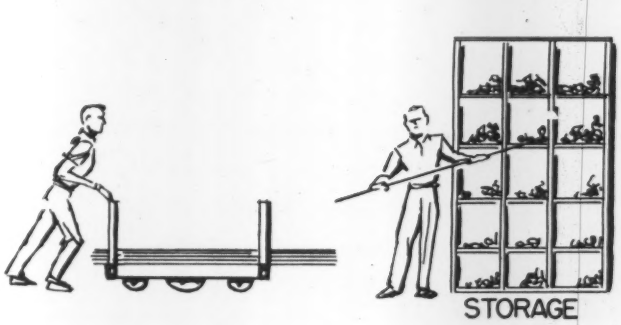
When it came time to ship finished sash, two to four men waited in a trucktrailer while another crew of two to four men on the floor level passed parts up to them. There were delays while the men stacked parts in the truck and while the floormen returned to the racks for more parts.

Stock ventilators were stored in horizontal stacks on the floor—piled as high as possible. When the stack got too high to reach from the floor, workmen climbed a ladder to add to the pile. When a ventilator was needed in assembly, the ladder was needed again to get the top parts off the pile.

Waste—Most of this handling work, since it was being done in a small plant, was handled by production workers. Time consumed in all handling was doubly costly, since it meant production operations had to be shut down to free the men, and the tedious operation often led to overtime.

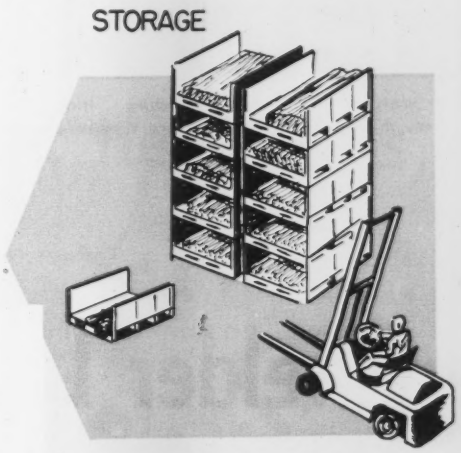
New Method — To whip the

Bars handled one at a time



SHIPPING: Four to eight men needed to load trucks

Bars handled in quantity



SHIPPING: Two men needed to load trucks

Saved: $3269.13

Floor space savings reduced the size of a plant addition. Value of saved space: $4455. Total savings are $7724.13

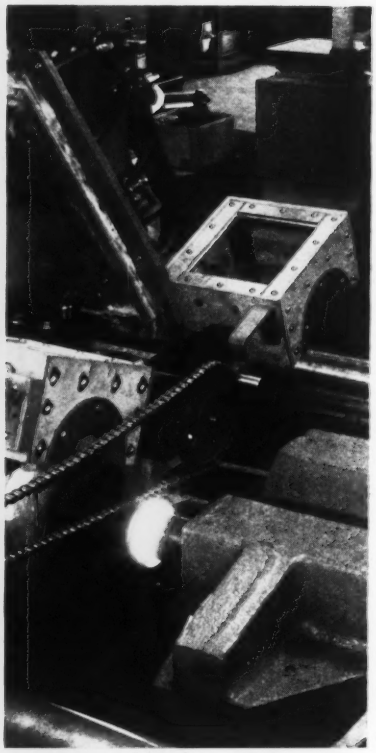
problems, Bliss management authorized the purchase of 50 unit bar containers that permit a lift truck to pick them up from any of the four sides, 20 wood pallets designed and made at Bliss that hold all vertically stacked loads in groups of 100, and a fork lift truck.

Now, the press operator puts cut sash lengths directly in the unit bar containers. The containers are laid on hand trucks for this job. The bars in the containers are moved to the stock area. The electric lift truck picks the containers off the trucks and stacks them, one on top of another, in tiers. All individual bar handling is eliminated.

The lift truck has made it unnecessary to pull men off the production line to load transport trucks. The forks are adjusted to enter a stock of vertically stored sash, move in, then raise the entire order to truck level. Two shipping department men carry out the whole truck loading operation. Production men work full time on production operations.

The combination of the wood pallets and the lift truck voids the problems that went with stacking vertical loads, including the operation conducted from a ladder.

Conservative Savings — Management approved the new system, based on a cost analysis that showed the $6000 investment would be recovered in 3½ years. That estimate didn't take into account a number of factors that have since shown the system paid off in less than a year.



Operator watches pipewelder in action. Induction coil (right) heats the joint while press forces the tubes together. Pressure varies, but 2½-in. pipe takes about 10,000 psi

Buttwelder Leaves No Flash

Induction heating, good fixturing, and a series of pressure changes are used to join lengths of steel pipe and tube more efficiently, says machine builder

HERE'S a new wrinkle for steel pipe fabricators:

In less than 1 minute an induction buttwelder makes a flash-free, smooth joint in any size pipe with ⅛ to ½ in. walls.

Tocco Div., Ohio Crankshaft Co., Cleveland, developed the machine. Swift Ohio Corp., Detroit, made the press mechanism.

The customer: Mitsubishi, Kobe, Japan.

Overcomes Drawbacks—Conventional flash buttwelds are strong and sound, but the method leaves a thin, extremely hard flash at the joint. On tubing welds, the flash can be inside. It's expensive to remove—and leaving it reduces efficiency and impedes fluid flow.

The Tocco machine leaves only a bulge at the weld site. Controls permit an operator to throw the bulge in any direction (see illustration). Boilermakers and fabricators of heat exchangers say the slight bulge inside the pipe will have little effect on flow.

How It Works—After cutting, pipe or tube end surfaces are milled or turned smooth by a milling cutter on the machine. Tubes placed in the press move against a heavy locator bar which moves out of the way. Clamps then move pipe ends together. At the start, pressure on the pipe ends is around 10,000 psi.

After current is on, an induction coil heats the joint. Upset and direction of bulge are controlled by movement of the clamping heads, rate of heating, pressure, and cycle

timing. Wall thickness determines timing. It takes about 30 seconds and 35 kilowatts to join a 2½-in. tube with ¼-in. walls.

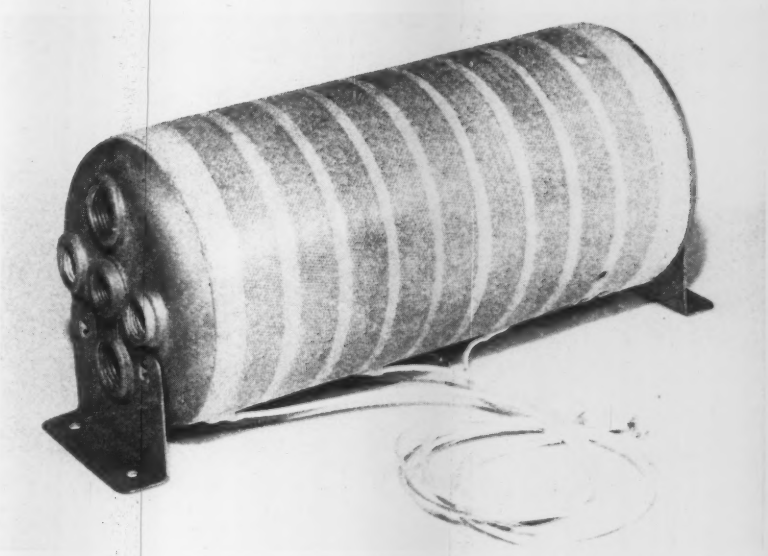
Operating Costs—Tocco officials say current costs are negligible, compared with those of manual arc-welding. Labor is lower since only one semiskilled operator is required.

Fixturing is the key to the process. Correct holding, cycling of pressures, and alignment produce sound welds without flash.

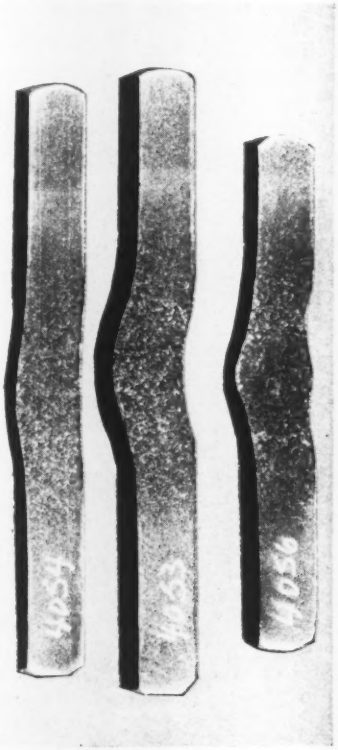
During welding, pressures change three times.

Possibilities—The designers say a machine can be made to handle almost any diameter pipe or tube. Larger sizes, like those used in cross-country pipelines, would probably be clamped internally to overcome ovality.

The equipment is not too large for field welding. At least one similar device (it uses the resistance principle) is being used by Consolidated Edison of New York (STEEL, Aug. 18, p. 115).



Wire mesh elements are a low cost method of powering this water heater used on commercial airliners



These macroetches show weld quality and the ways bulge can be varied—inside, outside, or a combination

Wire Fabric Heats Parts

Electrical heating elements are flexible. The tape is used in many applications that require a constant heat source. It will function even when some wires are severed

WIRE MESH heaters have a fabric construction that makes it easy to wrap them around containers of practically any shape. Applications include: Tubes and pipes carrying gases or fluids.

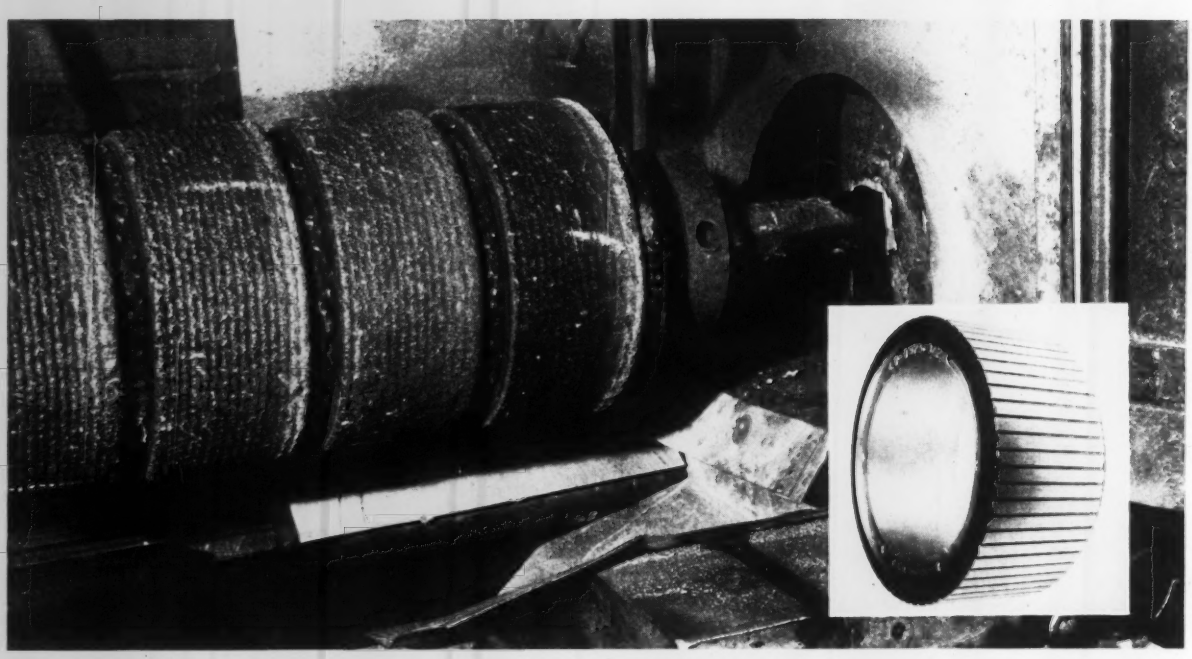
They are made of standardized tapes 0.25 to 2.0 in. wide. The design gives maximum heat transfer when elevated temperatures are needed (temporarily or permanently). Electrofilm Inc., North Hollywood, Calif., produces the tapes with varying metal and nonmetal components.

Tough Construction—Fine wires for carrying electric current are interwoven with glass fibers to form the fabric. The glass is the insulation. Wires are about 0.028 in. apart. They are arranged in a crisscross pattern that will keep uniform temperatures even when many of the wires are cut or broken. Standard electric terminals supply the power.

If the wire mesh is used for permanent heating, the elements are impregnated with plastics so they can be laminated or permanently bonded to various materials. Plastics used include neoprene, phenolic, silicon, epoxy, and polyester resins.

Some heaters have been produced with different types of insulation. Neoprene-impregnated nylon, for example, is a suitable dielectric for some chemical tank heating applications.

The assembled heaters are light—0.1 to 0.5 lb per square foot. This property makes them suitable for aircraft and missile applications when components need heating in subzero environments.



Rollers in the pelletizing machine have rough surfaces. Inset shows the V-grooves in the hard-faced rollers

Tungsten Carbide Rollers Are Tough

Roughness is similar to that of grinding wheels. Long life and economy are said to be the chief advantages over hard-faced and standard rollers used for pelletizing

TUNGSTEN CARBIDE coatings are adding life to parts that need wear resistance. For example, 20/30 mesh tungsten carbide welded on forged 1020 steel is the latest development in pelletizing machine rollers. (Rollers force the material through a perforated ring die in the process.)

The new parts are the most economical available, claims C. D. Fisher, director of research and development, Sprout, Waldron & Co. Inc., Muncy, Pa. Three types of rollers are in use: 1. Standard ball bearing steel (SAE 52100) heat treated to 57-60 Rockwell C. 2. Annealed 1020 steel with a hard face overlay. 3. Carbide coated rollers.

Normal Wear—The first type is satisfactory for average use. The surfaces are corrugated by cutting 90-degree V-grooves in the periphery, spaced 0.0945 in. apart. It's the least expensive roller.

Abrasive Service—Severe applications require an overlay to assure reasonable roller life. Hard facing usually takes about 1 hour for welding and 2½ hours for final grinding to size and corrugating.

About 3 lb of material are used per roll (⅛ in. overlay). The parts have two to five times the life of normal rollers. The cost increase is 50 per cent.

Economical Coatings — Tungsten carbide granules are applied with semiautomatic equipment (inert gas arcwelding), bringing the cost at least 50 per cent below that of hard-faced rolls. The cost of resurfacing the parts is a great deal less.

The roller has a rough surface, similar to that of a grinding wheel. New areas are exposed as the roller wears, maintaining a rough surface instead of wearing smooth. The roughness results in increased production in many pellet mill applications.

Field studies show that the carbide coating has superior life characteristics. For example, the diameter of hard-faced rolls decreased 1/32 in. ,after three weeks, use. while carbide coated rolls decreased 1/64 in.

US RUBBER V-BELTS

UNEQUALLED MATCH-ABILITY of U.S.V-BELTS is again demonstrated...

In the largest roofing felt mill in the world, The Ruberoid Co. of Gloucester City, N. J., U. S. V-Belts drive a dynapulper to pulp the trim from finished felt paper.

These belts were assembled *at random* from a distributor's stock. Recently installed (size C-144), they matched perfectly.

This same test has been performed many, many times with hundreds of other U. S. V-Belts taken from stock. The matching has always been flawless.

Such unequalled match-ability is your assurance that there are no loafers putting a life-shortening strain on the other belts and pulleys. You get the full measure of power transmission from U. S. V-Belts.

• • •

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United States Rubber

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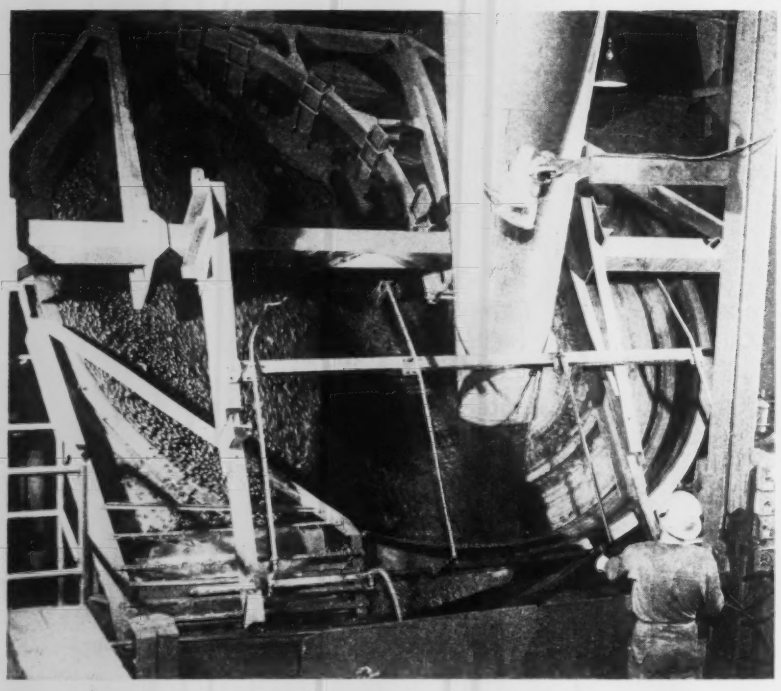
Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.



Balling disc is 16 ft in diameter. It has a capacity of 20 long tons an hour

New Source for Iron Ore

Over ten years of planning and development have gone into this process for utilizing the iron component of nickel ores. Initial production is over 1000 tons a day

HIGH GRADE iron ore is a by-product of International Nickel Co.'s nickel plant at Copper Cliff, Ont. Its analysis: 65 per cent iron, 0.003 phosphorus, 1.5 silicon dioxide, 0.01 sulfur, and 0.15 nickel.

The $20-million facility, which is now in full operation, is processing nickel ore at the rate of 365,000 tons annually. Iron is recovered from the nickel ore slag.

Process—Fluid-bed roasting and reduction in a rotary kiln are combined with magnetic separation to divide iron and nickel. After the ore is mined and concentrated, sulfur is eliminated by roasting. The calcine produced is selectively reduced in a pair of rotary kilns. Nickel is solubilized by leaching in an ammoniacal solution.

Magnetic solid-liquid separators take iron oxide from the solution. The fines are agglomerated on pelletizing discs. The 1-in. balls are fired on a traveling-grate sintering machine. Soda ash is added to the solution to make basic nickel carbonate which is processed into nickel in other Inco facilities.

Fluid-Bed Roasters—It is important to pinpoint the operating conditions. Insufficient oxygen promotes excessive quantities of magnetite which has a detrimental effect on nickel reduction. If the oxygen content of the roaster's exhaust gases is over 0.5 per cent, sulfate forms, interfering with the operation of the kilns and precipitators.

The process takes place at 1450° F with a controlled oxygen supply, although higher capacity would be favored by operation above 1500° F. That high temperature must be avoided because it would impair calcine activity in the reduction step.

The roasters are 43 ft high with an inside diameter of 22 ft, increasing to 26 ft (after the first 6 ft above the hearth). The air flow rate for each unit is about 1300 tons per day for the 500 tons processed.

Reduction Kiln—A rotary unit is used for reduction because of its efficient gas-solids contact, greater capacity, simplicity, and safety. It converts nickel oxides to an ammonia-soluble metallic state. The reaction is complicated by the critical equilibrium between the various oxides in the charge. The presence of iron oxides prevents a large portion of the nickel from being reduced (nickel replaces iron in the oxides).

To prevent this loss, the kiln operates in two steps. The first reduction is at 1600 to 1650° F in a strongly reducing atmosphere, limiting the formation of iron-nickel oxide. The second reduction is at a relatively low temperature (1200 to 1300° F). The iron-nickel oxide decomposes and releases ferronickel.

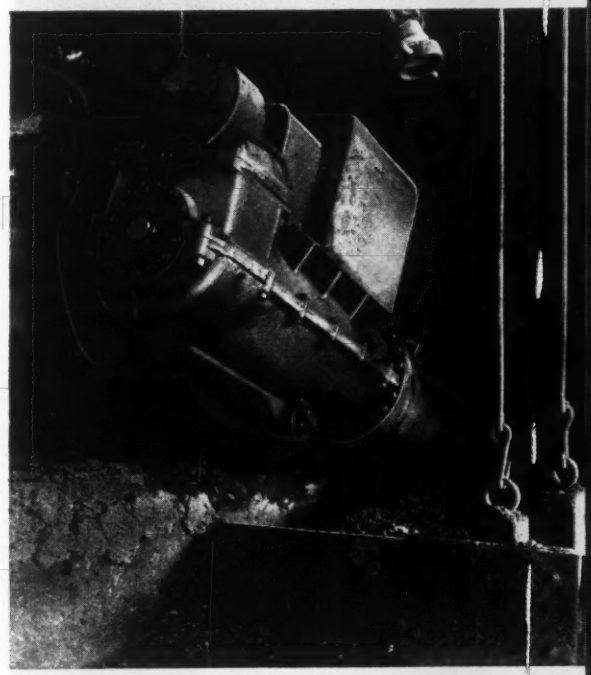
Final Steps—The products of the reduction kiln are primarily magnetite, ferronickel, and nickel-iron sulfide. Ferronickel and the sulfide go through several stages of ammonia leaching with the nickel going into solution.

The magnetic solids that are left behind are treated in magnetic separators. They are agglomerated by a pelletizing disc.

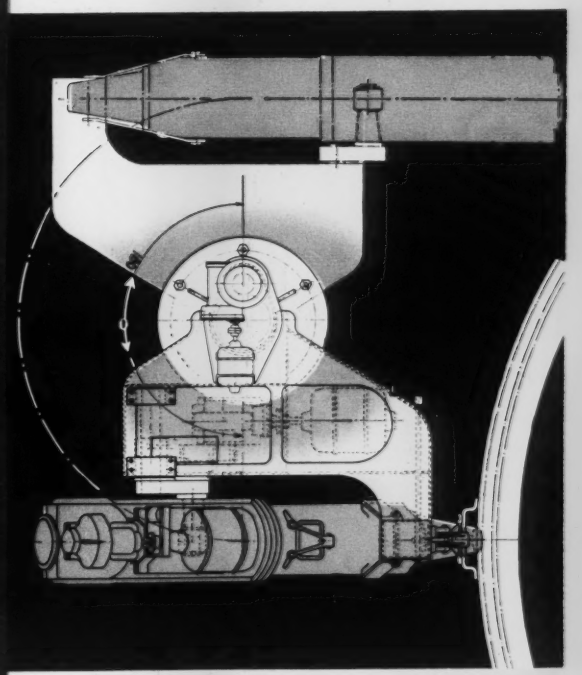
TV Keeps Eye on Slabs

Television cameras focused through portholes into the reheating ovens at Jones & Laughlin Steel Corp., Aliquippa, Pa., let the furnace charger watch the steel slabs and control their movement. The TV equipment paid for itself in the first month through fewer delays and improved production, says J&L.

POWER FOR MAINTAINING LONG TAPPING HOLES



FAST POSITIONING WITH ACCURATE CONTROL



YOU ARE SURE OF BOTH WITH Bailey CLAY GUNS

With clay pressures of 600 psi, Bailey Clay Guns have the power you need for plugging and maintaining long tapping holes. Fast, accurate positioning is assured by a unique mounting and operating system powered by three separate electric motors. Bailey Clay Guns have been proven safe and dependable for both blast furnaces and electric furnaces.

CAPACITIES

Bailey Clay Guns are built in four sizes with clay capacities, as follows:

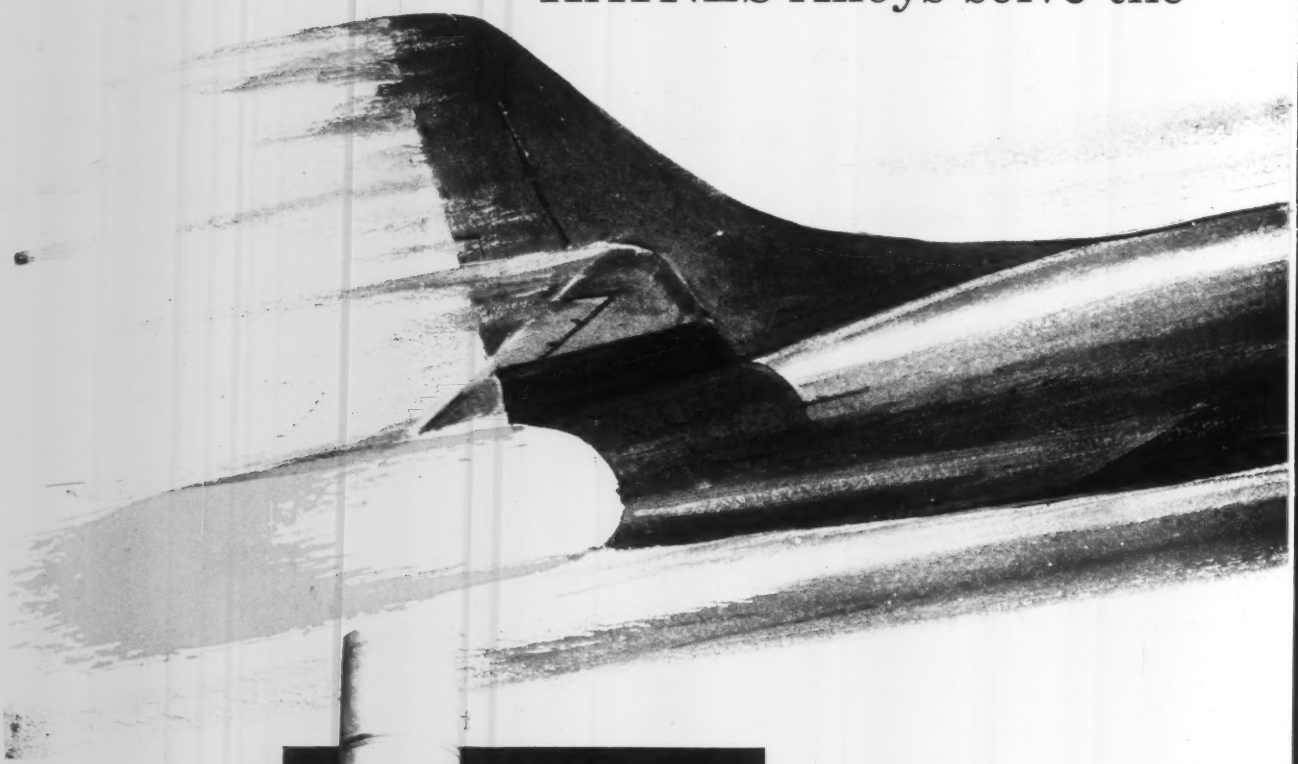
3 cubic foot
6.5 cubic foot
9.6 cubic foot
13 cubic foot

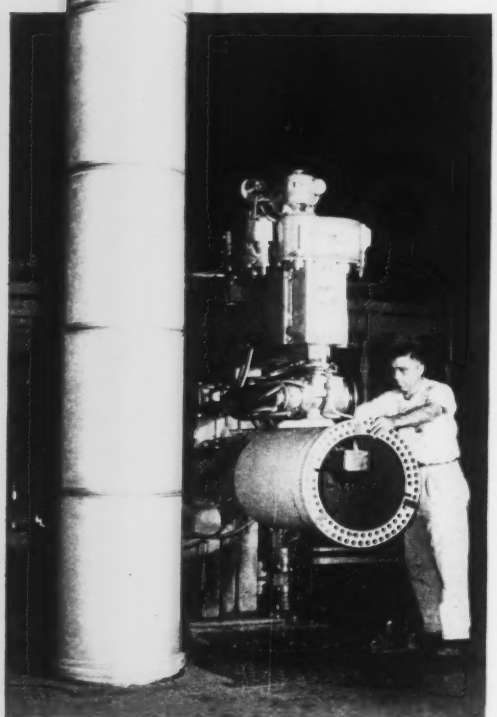
Bailey ENGINEERS

1221 BANKSVILLE ROAD PITTSBURGH 16, PA

HEAT • WEAR • CORROSION

HAYNES Alloys solve the



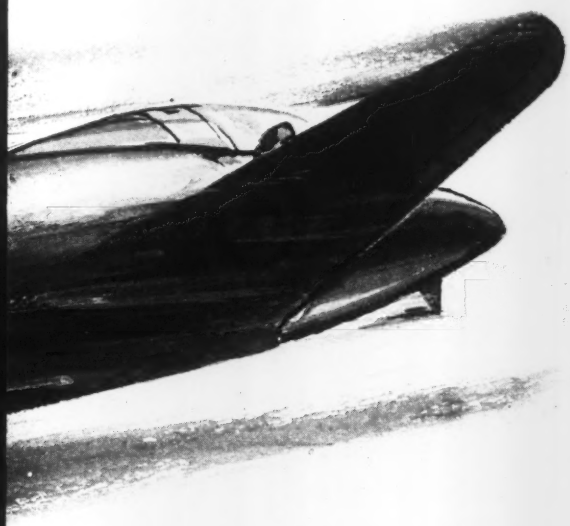


HEAT

2,000 degree jet blast!

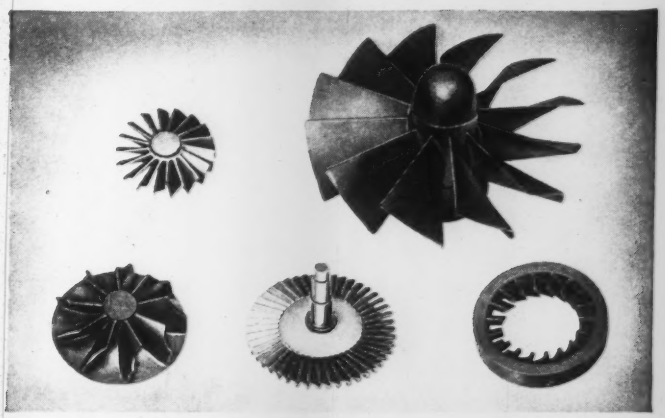
The jet engine tailpipe of the Navy's A4D "Skyhawk" operates at extremely high temperatures. That is just one of the many reasons why this part is made of MULTIMET alloy. This is one of 6 HAYNES wrought alloys that have unusual resistance to high temperatures and oxidation. Because of their exceptional properties, HAYNES alloys are being used extensively in such parts as after-burner components, jet engine tailpipes, turbine blades, and nozzle vanes.

tough problems



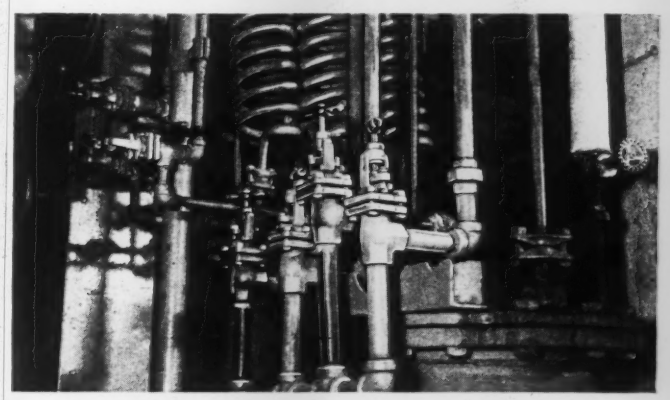
If you have an application that is creating a tough heat, wear, or corrosion-resistance problem, you will find it profitable to check with HAYNES Stellite Company. In practically every industry, you will find HAYNES Alloys doing a better job, lasting longer, reducing maintenance and proving most economical.

Tell us your problem and we will send you descriptive literature on the HAYNES Alloy best suited to solve it. Write HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana.



PRODUCTION Intricate turbine wheels mass-produced.

HAYNES' investment-casting method offers a selection of alloys developed for economical operation over a wide temperature range. Blades and wheels are produced as one integral part to as-cast tolerances that permit operation with unusually fine clearances at high speeds.



CORROSION Withstands corrosive chlorine 10 years!

Handling highly corrosive liquid chlorine was an expensive maintenance problem—until valves made of HASTELLOY alloy C were installed. This is just one of the many corrosive difficulties met by HAYNES Alloys. They also have excellent resistance to hot mineral acids, strongly oxidizing salts, and powerful gaseous oxidants over a wide range of temperatures and concentrations.

HAYNES
ALLOYS
HAYNES STELLITE COMPANY
Division of Union Carbide Corporation

UNION CARBIDE

"Haynes," "Multimet," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

Heavy-duty lift truck picks up an 8-ton deck hatch cover from an overhead crane. It will transport the load to temporary storage, and later to a shipping area

Heavy Loads Handled Easily

One 26,000-lb capacity lift truck takes care of the heavy jobs around this plant. It carries large steel boilers, hydraulic deck hatch covers, and steel plates

IF YOU have some heavy handling problems around your plant, take a look at how National-U. S. Radiator Corp., Johnstown, Pa., smooths them out.

Its Gerlinger, 26,000 lb capacity lift truck transports large steel boilers from the production area to storage and shipping points. When the truck isn't needed to carry the boilers, the company puts it to work carrying 13-ton loads of hydraulic deck hatch covers from an overhead crane in the finishing area to temporary storage.

The lift truck also transports heavy steel plates and other incoming materials from the receiving area to various processing points. With an attachment, it moves semi-trailers in the dock area. That feat permits rapid placement of the trailers without the need for a conventional truck cab.

Gerlinger Carrier Co., Dallas, Oreg., a subsidiary of Towmotor Corp., built the lift truck.

Easy Portability for Complete Flexibility

The New

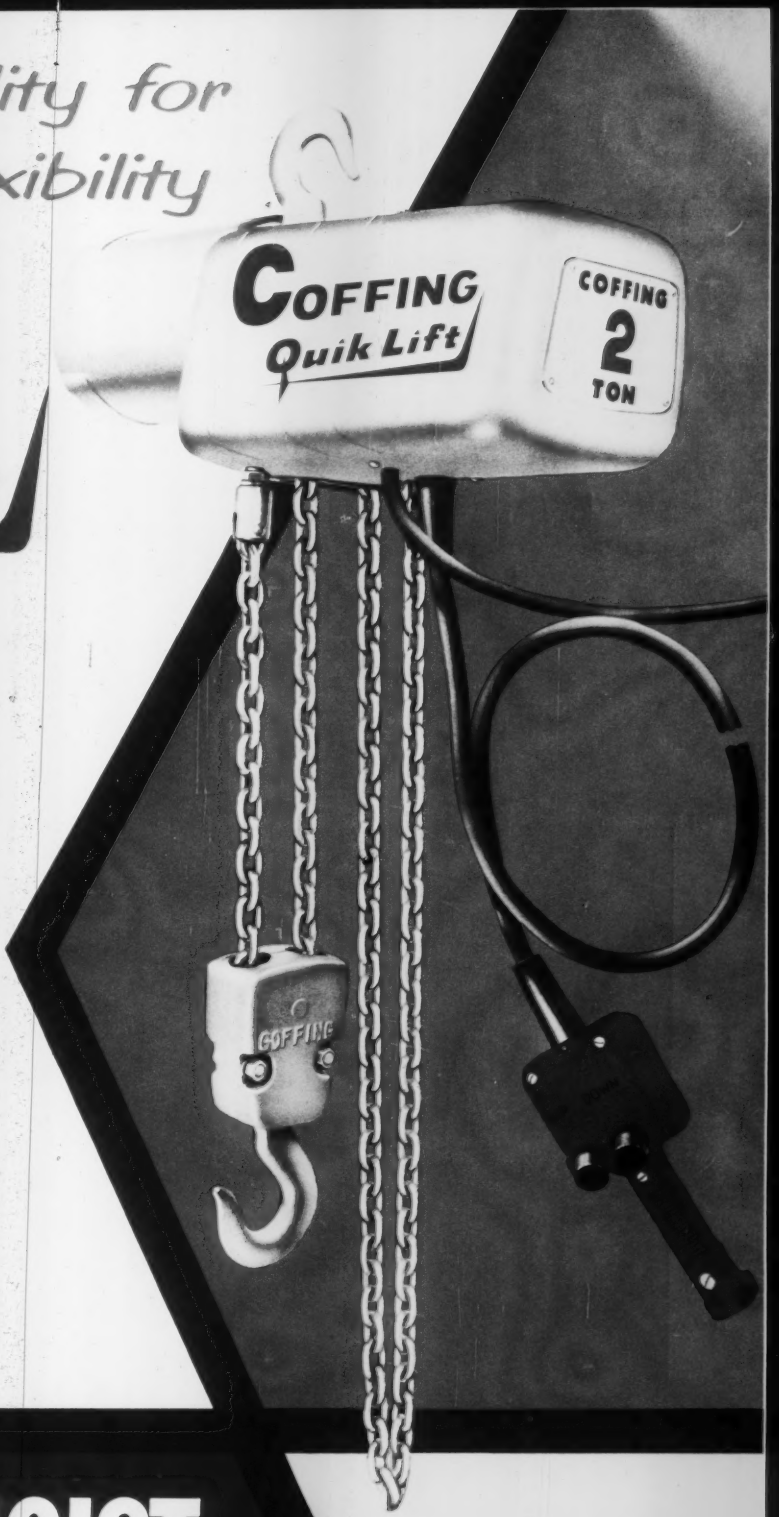
COFFING Quik Lift

COIL CHAIN ELECTRIC HOIST

The completely new Coffing Quik-Lift coil chain electric hoist is designed to give complete flexibility of use. No longer need your electric hoists be considered parts of the building.

Use of a die-cast aluminum housing reduces hoist weight without any loss of strength or durability, making the hoist easily portable. Voltage changes may be made by changing just seven quick connect terminals on the easily accessible terminal block. Converting from single to double chain lifting, rechaining, or converting from hook to lug suspension is accomplished by removing three bolts and shifting or replacing the suspension unit. Adjusting the limit switch for a new lift can be done quickly by moving two nylon nuts to the correct positions.

If you are interested in achieving flexibility in your hoisting operations, investigate the new Coffing Quik-Lift. Your distributor will be glad to give you complete details, or write for bulletin ADH-65.



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- Interlocked Push-Button Controls
- Lightweight for Easy Portability
- Convenient Operation
- Accessibility

DUFF-NORTON

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Bill Lucas, manager CSS stainless steel department, "following through" on individual orders with mill operating management.

On Direct-Mill Orders THE HOUSE OF STAINLESS Provides the Extra Service of Interpreting Your Specific Needs to Operating Management at the Producing Mill

When you place your direct-mill requirements on stainless steel through The House of Stainless, you get more than you bargain for.

At CSS, we are in constant touch with our producing mills regarding individual orders—by direct line telephone and teletype. But that's only part of the story. To make sure that the product you receive meets your exact specification and that it is delivered in accordance with your production schedule, our mill specialists make frequent PERSONAL VISITS to the mills involved. There, they interpret your special requirements to operating department heads so that your needs are clearly understood by those responsible for producing your material.

Remember too . . . when you place your direct-mill order through The House of Stainless . . .

1. **Your company identity is never lost at the mill level;**
2. **You get exactly what you need at the best price and best delivery, because we know the capabilities of our many mill sources;**
3. **Because CSS is like "many mills in one," you have only one order to write and one invoice to pay when your order calls for diversified items.**

Yet . . . you get these benefits at NO EXTRA COST. And, of course, you can count on close, personal attention to your warehouse needs, as well.

The House of Stainless — CSTEEL AT YOUR SERVICE — SILL

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YOUR DEPENDABLE SOURCE FOR BOTH CARBON AND STAINLESS STEEL

ASTM Issues Specs

Approves basic oxygen process steel for tubular, bar, and structural products

TUBULAR PRODUCTS, bar steels, and structurals have been added to the list of products made from basic oxygen steel which have the approval of the American Society for Testing Materials.

In addition, ASTM subcommittees approved the process for bar steel concrete reinforcements and for sheet steel and have recommended their inclusion in ASTM standards.

Specs Revised — The wire and wire fabric specifications are being revised to include a wire of 75,000 psi strength and also to include galvanized fabric. Several specifications will probably be established covering billet steel reinforcement of strengths above those covered by Specifications A 15 and A 408.

The society is also studying a new terminology for reinforcement steel bars, based on the yield strength rather than the present nondescriptive terms of structural, intermediate, hard, rail, and axle.

In Progress—Work is being started to develop specifications for leaded steel forgings for flanges, fittings, valves, and parts. Other specifications under development cover carbon steel pressure vessel plates of improved transition temperature, case carburized chain, and welded chain for sprocket wheel applications.

ASTM Specifications A 292 and A 293 covering turbine and generator rotor forgings are being extensively revised by changes in chemical composition, mechanical properties, and heat treatment. Additions include impact test requirements, transition temperatures, ultrasonic inspection, and magnetic particle inspection.

Cast Copper Data Offered

Data on 16 mechanical and physical properties of three copper-base casting alloys—80-10-10, 85-5-5-5, 88-6-1½-4½ (Navy "M") — have been determined by Battelle Memorial Institute, Columbus, Ohio. They are available from the Brass & Bronze Ingot Institute, Chicago.

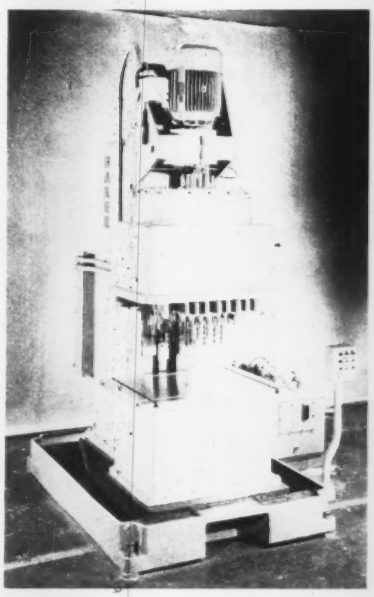
New Line Features Variety

About 75 variations of the seven basic components help this builder aim his line at both the mass production industries and the small plants that need flexibility

MOST special machine tools are made with the building-block concept in mind. Standard bases, columns, heads, and other components are being assembled into special-purpose combinations. For both the user and the builder, it makes economic sense. (STEEL, Nov. 4, 1957, p. 67.)

Now the building-block concept is working its way into the standard machine tool field. Baker Brothers Inc., Toledo, Ohio, for instance, has announced a new series of vertical and horizontal hydraulic drilling machines that uses building-block versatility to the hilt.

How It's Worked—Take the vertical machine (shown) as an example. You can get any of three different column sizes (12, 18, and 24 in. way widths) mounted on the base. You can then add any of 21 standard universal heads, or any of 26 standard fixed-center heads, plus specials. Then you can buy an adjustable table, one of six standard rotary tables, or one of 18 standard box tables to go with the machine.



This vertical drilling machine uses a universal joint head and a box table. Fixed center heads, elevating tables, or rotary tables can also be used

When the job you're doing changes so that machine modifications become practical, you can get new components (standard) to handle the new work, and the change can be made in your plant. This keeps your machine from becoming obsolete when a job changes, and it typifies one of the major advantages of building blocks.

Why?—Baker engineers went to work on the designs for the new line nearly two years ago. At that time, says D. A. Utley, assistant to the president, Baker management decided to start from scratch, looking for a standard machine tool line to augment the specials. A line was sought that would be marketable both to large, mass production industries and to the small shops. The answer is the line of drills that bears strong resemblance to special purpose machine tools, but has the versatility of a standard. Thus, the high-production potential of the fixed-spindle head, or the high flexibility of an adjustable-spindle machine is incorporated in the same basic machine; only the heads have to be changed.

As to Builder Efficiency—Baker is now building components for inventory. This makes it less expensive to produce parts, since they can be turned out in large lots—and it cuts leadtime to the customer so it can be nearly equal to assembly time when no special engineering is needed.

A 17-7 PH stainless honeycomb is being dipped into nitric acid solution. Each square foot contains about 5 troy ounces of silver

Honeycomb Scrap Upgraded

Here's a way to reclaim stainless and the silver brazing alloy used in such structures. Unless the two are separated, the silver becomes an impurity

DURING the remelt of scrap stainless honeycomb, the silver brazing alloy enters the steel. The scrap isn't of top quality because austenitic stainless steels containing silver are susceptible to corrosion and are inferior to silver-free 18-8 alloys.

Engineers at Martin Co., Baltimore, solved the problem: The silver is dissolved when the scrap is soaked in a solution of 50 per cent nitric acid for about 20 hours at room temperature. The resulting action does not damage the surface of the stainless.

Silver Also Recovered — Each square foot of honeycomb contains about 5 troy ounces of silver. Martin ships the nitric acid solution to Handy & Harman, New York, refiners of precious metals, where silver is recovered.

The recovery of silver from processed industrial x-ray film is also profitable.

Feeder Cuts Costs

A load cell meters exact weight of alloy addition. Unit frees workers for other duties

AN AUTOMATIC feeder stretches dollars spent on ferromanganese or other alloy additions to the ladle by avoiding overuse or underuse. It also reduces the hazard of pouring operations.

Examples—On the basis of 2000 heats of high ferromanganese, Lone Star Steel Co., Dallas, reports a saving of 15 cents per ton of ingots produced. It results from economies in making the addition to the ladle rather than to the bath.

Youngstown Sheet & Tube Co., Youngstown, is saving through cutting heat time 10 minutes (a furnace block is eliminated), a manganese recovery increase of 10 per cent, and a sharp decline in the number of heats missed for manganese.

How It Works—The unit includes hoppers, separate electrical vibrating feeders for each bin, an adjustable chute, and a control console. Bins are mounted on a strain gage load cell.

The operator sets the unit to deliver specific amounts of one or more materials and to control the rate of addition. The feeders have a self-dumping mechanism in case of power failure.

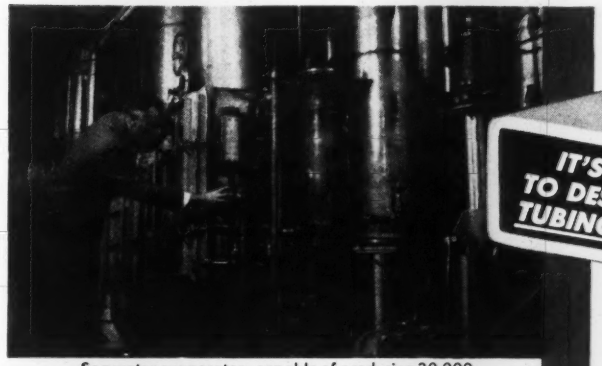
Blaw-Knox Co., Pittsburgh, built the feeders to fit the electrical and space conditions of the shop. They can be integrated into a mechanized material handling and storage system.

Aluminum Alloy Developed

Reynolds Metals Co., Richmond, Va., has developed a new aluminum alloy that combines high tensile and yield strengths with high elongation and excellent castability.

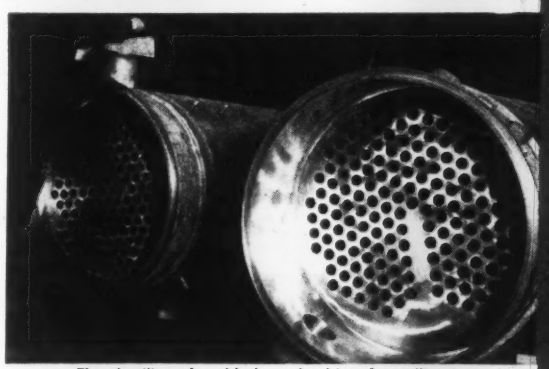
Designated Alloy 357, it handles with the ease of Alloy 356, says Reynolds, but develops considerably higher mechanical properties. Any foundry casting Alloy 356 can handle the new one.

Typical permanent mold T-6 properties: Tensile, 48,000 to 50,000 psi; yield, 25,000 to 37,000 psi; elongation, 6 to 10 per cent.

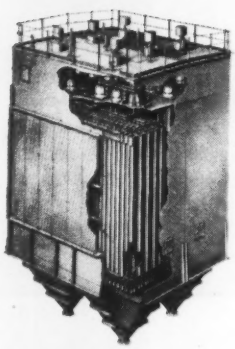


Sea water evaporators capable of producing 30,000 gallons of fresh water daily depend on welded stainless steel tubing for corrosion resistance.

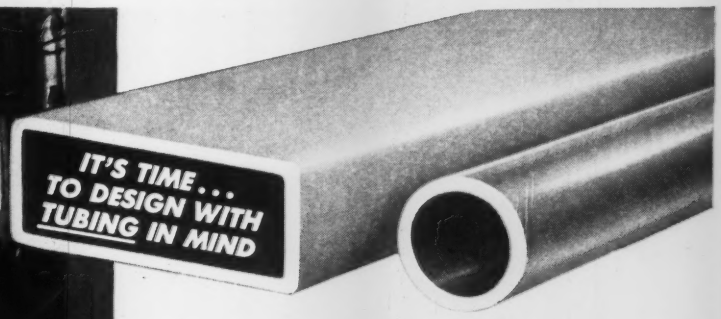
The casings and plugs in this sodium reactor core are welded stainless steel tubing to insure corrosion resistance and uniform fit.



The ductility of welded steel tubing for rolling-in, plus reliable corrosion resistance and durability are added advantages in this heat exchanger.



This industrial plate-type precipitator utilizes deformed rectangular tubing for light weight in service—economy of electrode fabrication.



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The reason? These are *natural* properties of welded steel tubing—created by its design and manufacturing process.

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An Association of Quality Tube Producers

LC-582

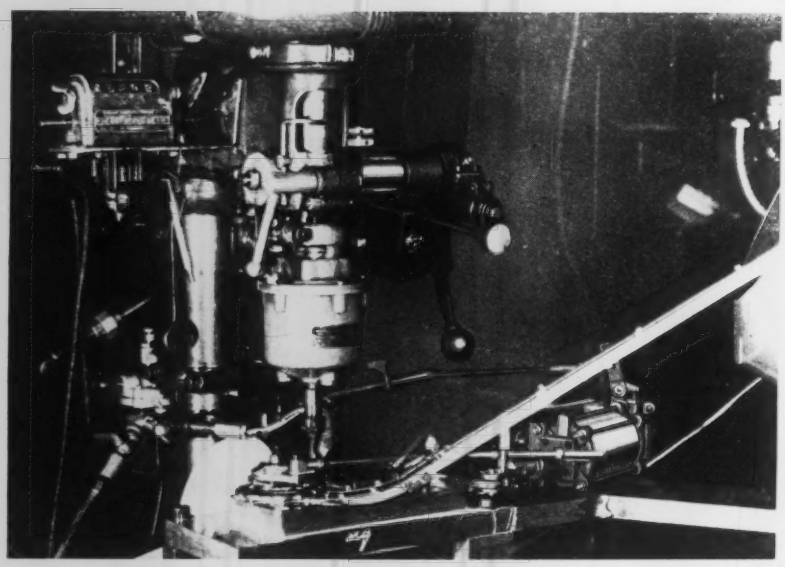
Four Cases Where It Paid to . . .

Consider Low-Cost Automation

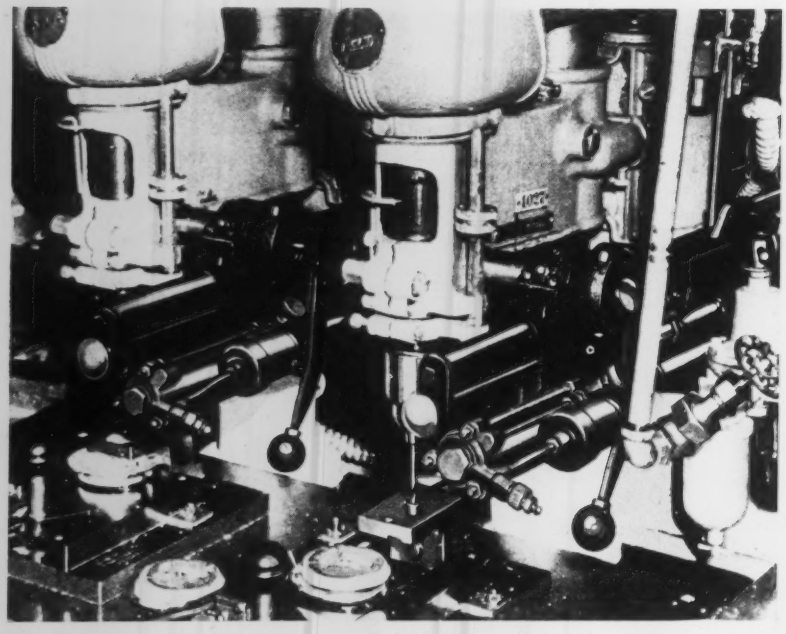
By BEN ELDRIDGE and J. L. FISHER JR.

Metal Products Manager, Delta Power Tool Div., Rockwell Mfg. Co., Pittsburgh

Chief Engineer, Bellows Co., Akron



1 **Hopper feeding and an automatic machine cycle** boosted disc tapping from 1750 to 2500 parts an hour. A revolving hopper and strip of track dole the 1 3/16-in. parts to workholding fixtures on the rotating table. As the air-power fed spindle starts down, an air motor clamps the part. As the spindle retracts, the clamp lets go and the table indexes for the next cycle



2 **Automatic spindle feed** ties two drill press heads together so one operator can work both with no lost time. About 50 per cent more holes are reamed in phonograph record changer cams than before—the operator loads a part in the first machine while the other machine is working. She's turning out 200 parts an hour. Two operators used to make 130 an hour. Direct labor cost is down 65 per cent

DON'T overlook automation when you're making parts in short runs. It may help you cut costs on many separate (sometimes unrelated) operations.

For example, consider pneumatic controls added to drill presses or drill press heads. Laborious drilling work can be made semiautomatic or automatic, and individual operations can be combined by equipping standard units with pneumatic controls for spindle feed and for indexing, positioning, and clamping the work.

Plusses—Low cost automation of this kind offers the flexibility needed for frequent changes in runs and product designs.

Mechanization of feed and work positioning actually increases the uniformity of drill presswork. Pneumatically controlled drill press setups are often used where tolerances are as close as 0.0005 in. in heavy-duty work.

Where the setup becomes obsolete because of product design

You can use standard components, tailored to special needs, to cut production costs and boost output. Here's how it can be done with pneumatically controlled drill presses

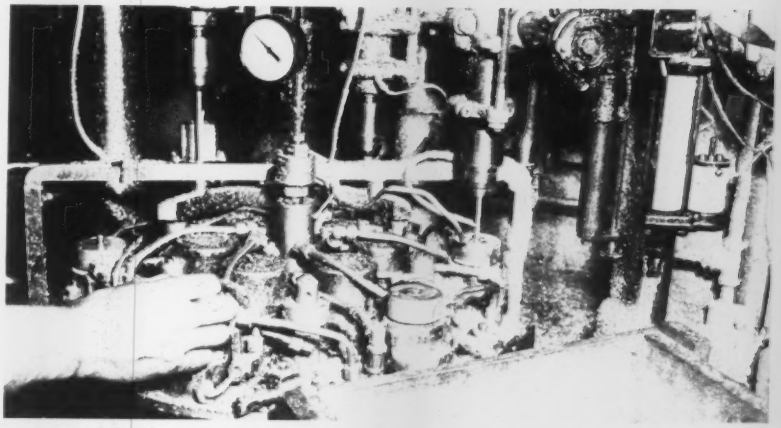
changes, tools and controls can be used again in new setups.

The drill press can be adapted to a variety of special or awkward drilling jobs. It can also be used in special setups with grinding and polishing wheels and milling and routing cutters.

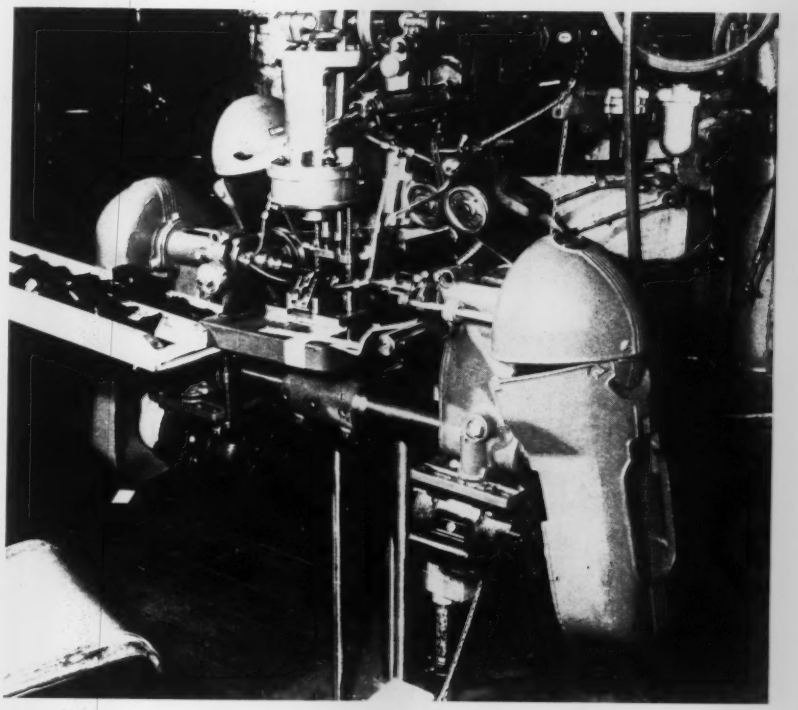
Example—With an automatically indexed rotary table and automatic spindle feed, the drilling operation becomes machine paced. The operator needs only to load and unload the workholding jigs. In one such setup, three holes in a part are drilled simultaneously with multiple spindle attachments on drill presses. The rotary table holds six jigs, and an air motor clamps each piece as it comes under the drill head. The air power feed on the drill press, the rotary table, and the clamping unit are all synchronized to work continuously and automatically. This setup is more than twice as fast as was manual drilling of the holes.

Example — Gale Products Co., Galesburg, Ill., uses five drill presses, mounted horizontally, to drill three holes and counterbore two others in a driveshaft tube only 1½ in. in diameter and 12¼ in. long.

The machine, with the five drill presses arranged around a workholding fixture, is simple to load and operate. The fixture is a right-angle block with a locating plug that assures correct positioning. A toggle clamp holds the tube during drilling. The operator simply places a tube in the fixture and trips a switch. All five drill heads, each at the right speed and feed, complete the operations and return to the starting position. The unit drills 400 shafts an hour.



3 **Sequence control of multiple operations,** with the part held in a single indexing jig, eliminates all handling between the operations. Here, three drill presses are mounted around an eight-fixture rotary table at Precision Products Div., Ostby & Barton Co., Providence, R. I. To maintain uniform wall thickness in the beryllium-copper electrical connector sockets, the 0.0209-in. hole has an over-all tolerance of only 0.006 in. in a ½-in. depth. The first drill centers the piece; the second drills the hole to half depth; and the third completes the job. An air blast removes the parts from the fixtures. The job used to be done on a turret lathe, at 250 parts an hour. Production on the new setup (after more than 3 million parts) is 1380 an hour. Rejects, once a problem, are virtually eliminated



4 **Inverted "T" arrangement** of three drill presses puts four holes in three sides of a camera flash unit housing at Ansco. Actuated by one pedal, the three drills act simultaneously. Exhaust air from the spindle feeds blows chips away. Production used to be 585 parts each shift when the parts were loaded in tumble jigs and machined by three separate drill presses. Production now: 4000 parts a shift

Why cost conscious engineers specify

Research-Cottrell

Model Studies

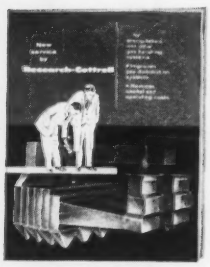
One of the biggest problems in getting the most out of precipitators has been proper gas distribution at the precipitator inlet. Until recently this has been largely a matter of educated guessing.

Now, by using three dimensional, transparent scale models, Research-Cottrell has taken the "guesswork" out of engineering gas handling systems. Both major and minor design changes are made inexpensively on these scale models and the effects on gas flow studied. Correlation between models and full scale installations has proven the reliability of Research-Cottrell's new pre-installation techniques.

Briefly, here are the advantages of Research-Cottrell's gas flow model studies:

- Higher collection efficiency—when gas distribution at the inlet is more uniform, collection efficiency is higher.
- Smaller precipitator—for a given collection efficiency, precipitator size can be reduced by improving gas distribution at the inlet.
- Less pressure drop—by minimizing turbulence through improved flue design, pressure drop has been reduced by more than 40% in some cases.
- Less space needed—simplified flue arrangements and smaller precipitators can mean substantial savings in space.

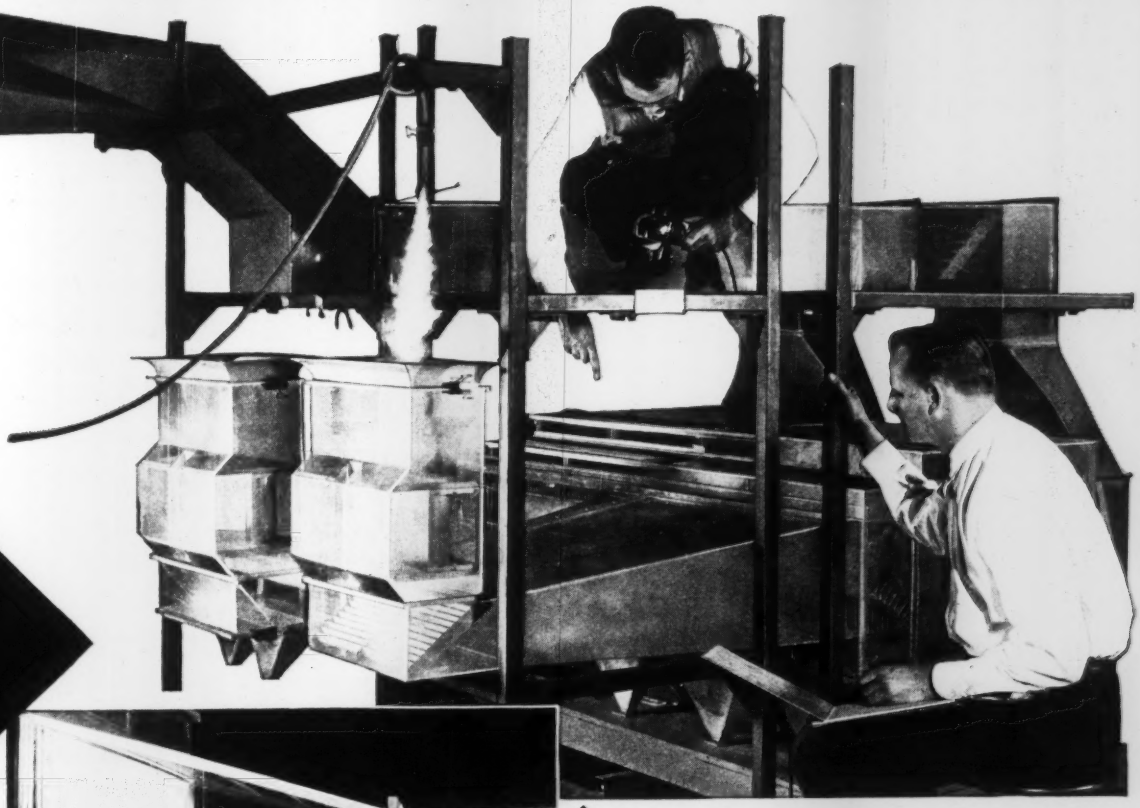
This new service is available under three broad plans:



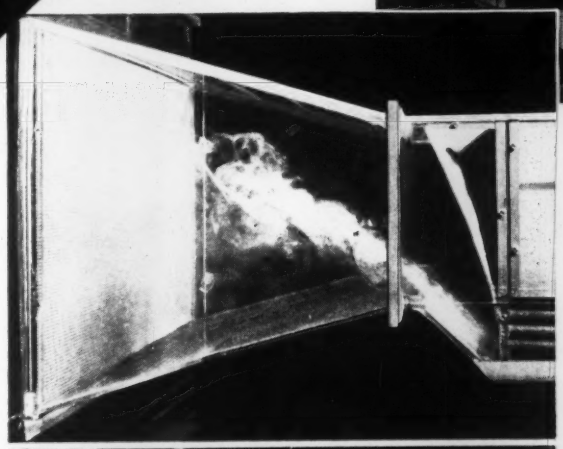
1. As part of a precipitator contract. 2. A study completely independent of a precipitator contract. 3. For any industrial gas distribution problem where these techniques will be beneficial.

For more details on this new service write for Bulletin 1.

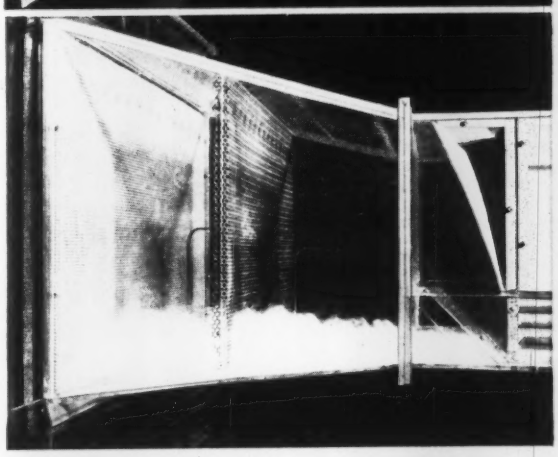
RC 196



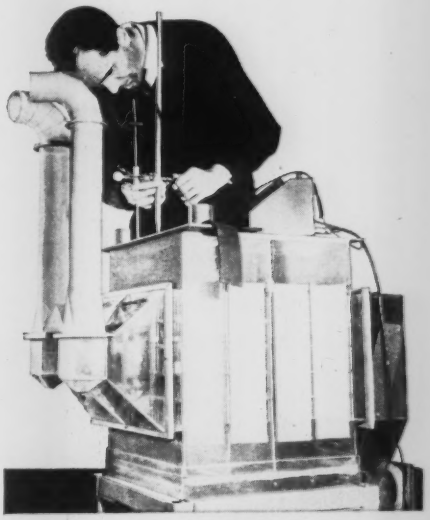
↑ Research-Cottrell engineers studying the results of a change in flue design. This is a scale pre-installation model of a precipitator which handles 1.4 million cfm.



← The original flue design between air heater (right) and Cottrell precipitator (left) resulted in a turbulent, uneven pattern. Note the space between gas flow and bottom of flue and precipitator inlet.



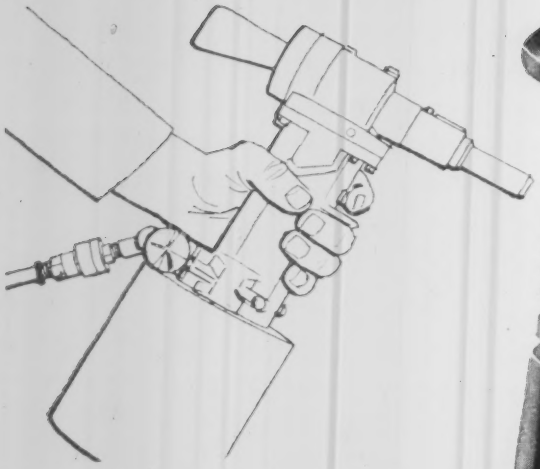
← After sharp angle of flue was eliminated and perforated plate correctly positioned in flue, turbulence was minimized and gas flow hugs the floor.



A velocity traverse is being made across precipitator plates. This is part of a study on the effect of variations in positions of perforated plates in the gas handling system.

Research-Cottrell

RESEARCH-COTTRELL, INC. Main Office and Plant: Bound Brook, N. J. • 405 Lexington Ave., New York 17, N. Y. • Grant Building, Pittsburgh 19, Pa. • 228 N. La Salle St., Chicago 1, Ill. • 58 Sutter Street, San Francisco 4, Calif. • Research-Cottrell (Canada) Ltd., 33 Bloor Street East, Toronto 5, Ontario.

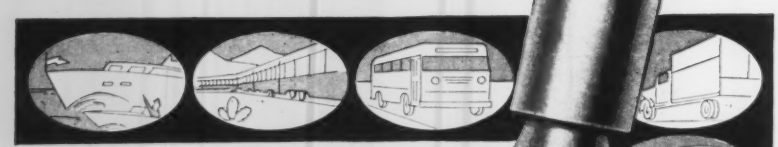


Vibration-proof fastening for transportation equipment by Townsend

Townsend blind rivets* and Townsend Lockbolts† provide economical, vibration-proof fastening for all types of transportation equipment. Both in manufacture and repair, Townsend transportation fasteners are easy and fast to install—giving high worker productivity. Once installed, they make a tight joint which will resist the loosening effects of vibration indefinitely—lowering maintenance costs for your customers.

For information on how Townsend blind rivets and lockbolts can give you better fastening for less money, consult your Townsend representative or write for literature to Townsend Company, P. O. Box 237-C, New Brighton, Pa.

*Patents issued and pending
†Licensed under Huck patents RE22,792; 2,114,493; 2,527,307; 2,531,048; 2,531,049 and 2,754,703



The Fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

Oven Aids Finishing

Increased costs and delays on rush orders brought about shift in methods; output soars

PRODUCTIVITY has been increased about 500 per cent and delays eliminated since McKinstry Metal Works, Chicopee, Mass., installed an electric radiant oven. Product finishes are harder and surface scratches have practically disappeared, resulting in improved appearance over previous air dried finishes.

Other advantages: Output can be easily adjusted to conveyor speed and other variables. Recordable settings eliminate guesswork on repeat orders. Safety has been improved.

Range Is Broad — Sizes and shapes vary widely in the product mix: Electrical wiring troughs, panel boards, wiring boxes, control and instrument cabinets, and assorted brackets and fixtures. Baked finishes include flat, wrinkle, and hammer-tone.

The simply constructed 32-ft oven is equipped with 42 radiant heaters made by Chromalox Inc., Pittsburgh. They total 151.2 kw. The power supply is 240 volts, 3 phase.

Extreme flexibility was designed into the controls, as well as the location of the heaters, to fit the heat pattern and control to the work size.

Chromalox input controllers and toggle switches control top and bottom sections of heater banks in three heat zones.

To avoid lines of heat on the work and provide uniform radiation throughout the oven, all heaters are mounted at a 15-degree angle.

Operating temperatures are selective to a maximum of 425° F. Heatup time from a cold start is about 10 minutes. The oven is normally in use the entire day. When not needed, it is partially energized on a standby basis.

Capacity is about 2400 lb of steel an hour. Conveyor speed is adjustable between 2 and 6 ft a minute. Baking time is variable (5 to 16 minutes).

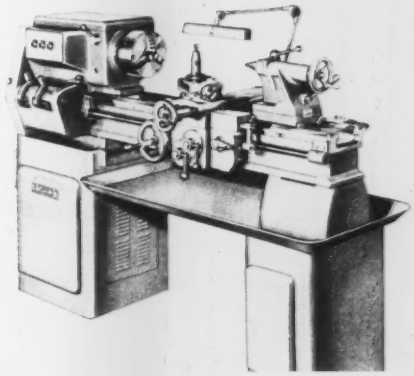
The oven was designed and built by F. M. Keefe Co., Indian Orchard, Mass.

Lathe Provides Best Features of Two Systems

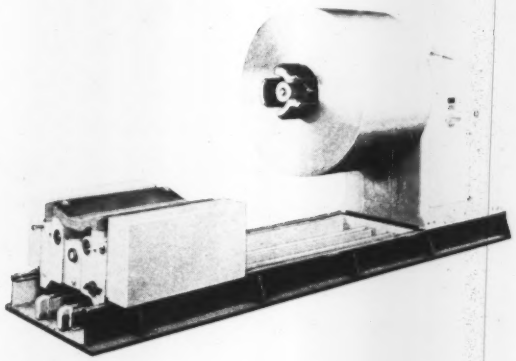
This 15-in. precision lathe offers large capacity at low cost by combining the power and capacity of a geared head lathe with the economy and flexibility of a belt driven one.

Its fully enclosed headstock has a single shift back-gear lever. The gearbox has 60 pitches and feeds, and the double-walled apron (running in oil) has two independent drop lever clutches for engaging power feeds. Spindle range is 40 to 1250 rpm.

A built-in reverse lever permits changing the direction of the precision lead screw while the lathe is running. Machine beds are available with 5, 6, or 8 ft lengths, with 31, 42, or 66 in. between centers. *Write*: Sheldon Machine Co. Inc., 4258 N. Knox Ave., Chicago 41, Ill. *Phone*: Mulberry 5-1970



Reel Handles 15,000-lb Steel and Tin Plate Coils



This motor driven reel and loading car combination will interest users of heavy coils of tin and steel plate, the arms taking the 16 to 17 in. ID stock.

A 5 hp, variable speed drive supplies stock at the exact rates required by using equipment.

In operation, the loading car raises the coil for alignment with the reel spindle. The car then moves on tracks to the reel arms and lowers when the coil is positioned. The three arms of the reel expand hydraulically to center and hold the coil.

Coils up to 15,000 lb, 54 in. OD, and 36 in. wide are handled. The arms expand from 14½ to 17½ in. Floor area is 40 x 152 in. *Write*: F. J. Littell Machine Co., 4101 N. Ravenswood Ave., Chicago 13, Ill. *Phone*: Eastgate 7-5000

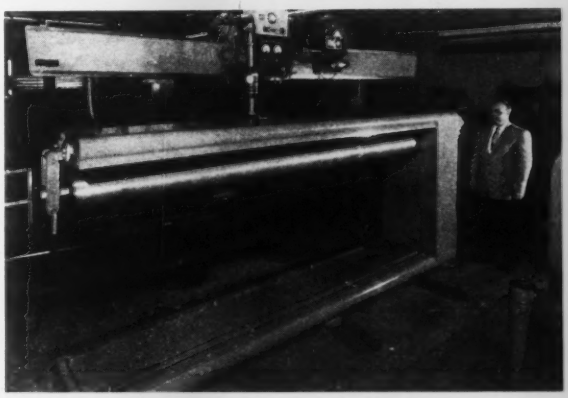
Welding Positioner Holds Piece under Pressure

A longitudinal welding positioner (medium hold-down pressure) joins metals up to ¼ in. thick in any regular configuration. This includes flat sheets, cones, and cylinders up to 30 in. OD.

The Model LW10020 has a Hydro-Booster unit that activates two parallel continuous banks of gripping fingers. These move the edges together and hold them under required pressure.

Interchangeable mandrels are available. They are equipped with thermostatically controlled heating devices designed to preheat and postheat the weld joint.

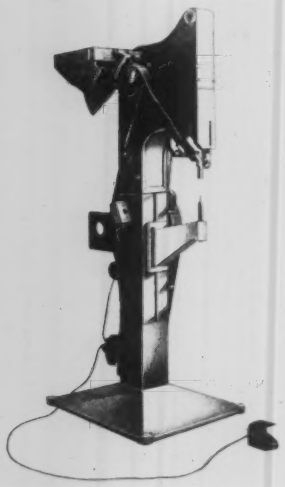
Welding length is 10 ft; total working space height, 30 in. *Write*: Airline Welding & Engineering, 3723 Wilshire Blvd., Los Angeles 5, Calif. *Phone*: Dunkirk 8-3479



NEW PRODUCTS and equipment

Machine Sets Long Rivets

The Model 423, long stroke, riveting machine handles and sets



long rivets of the tubular and semitubular type in metal and plastic products.

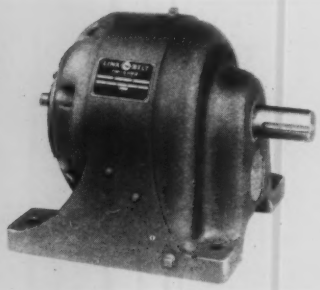
It will set rivets up to $2\frac{3}{8}$ in. long and $\frac{1}{4}$ in. in diameter.

Smooth, continuous feed is insured by a blade-type hopper. Rivets are fed automatically to the work when the single revolution clutch is activated. Throat depth is 12 in.; stroke is $5\frac{1}{2}$ in. *Write*: Milford Rivet & Machine Co., Milford, Conn. *Phone*: Trinity 8-1761

Drives Have Helical Gears

A quadruple reduction helical gear drive (and larger sizes of double and triple reduction drives) augments Link-Belt gear drives.

The compact unit, available in five sizes, extends the range of ratios as high as 2217 to 1. Capacities to more than 200 hp are



available. *Write*: Dept. PR, Link-Belt Co., Prudential Plaza, Chicago 1, Ill. *Phone*: Randolph 6-7790

Valve Has Quick Response

The Hi-Speed in-line control valve is the poppet type. Pilot operated, it is designed for external pilot supply.

It can be used for brake, clutch, and other high speed operations where main operating pressure is below 20 psi, where the valve is controlling vacuum down to within 1 in. Hg absolute, or where pressure on the valve is reduced below 20 psi for machine setup. *Write*: Valvair Corp., 454 Morgan Ave., Akron 11, Ohio. *Phone*: Princeton 3-6623

Filters Hydraulic Fluid

A micronic in-tank filter assembly is available in three models. Rated flow rates are $7\frac{1}{2}$, 15, and 30 gpm.

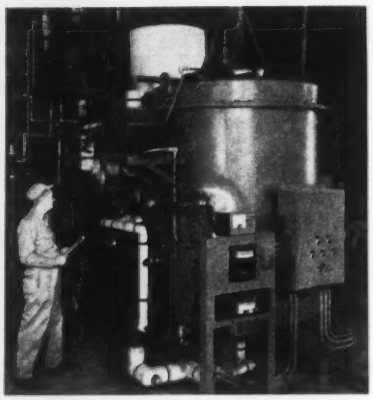
The use of resin impregnated

cellulose in an accordion pleated cylindrical configuration exposes the largest surface area possible. This results in highly effective filtering of particles 10 microns or larger.

The filter mounting is stainless. *Write*: Kahn & Co. Inc., 547 Windsor St., Hartford 1, Conn. *Phone*: Chapel 6-7431

Unit Generates Hydrogen

A compact, packaged hydrogen gas generator comes in various sizes for continuous production of 250 to



5000 cfh of 99-plus purity hydrogen.

Features include pushbutton safety purge starting, automatic controls, and proved safety devices. *Write*: Gas Atmospheres Inc., 20011 W. Lake Rd., Cleveland, Ohio. *Phone*: Edison 1-7070

Sanding without Dust

A 3 in., heavy duty belt sander attaches to any standard industrial or domestic vacuum cleaner to eliminate over 90 per cent of all dust and fine metal powder.

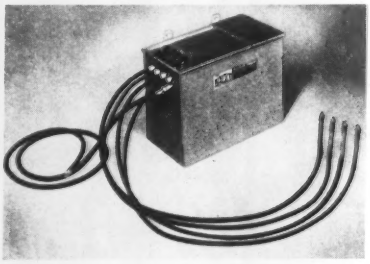
The machine permits sanding in the same area where painting is being done. Its flush side permits accurate sanding up to vertical surfaces.

A timing belt drive that requires no lubrication eliminates the danger of dripping grease on the work. *Write*: Black & Decker Mfg. Co., Towson 4, Md. *Phone*: Valley 3-4400

Provides Mist Coolant

This compact unit can be added to machining and grinding operations for mist cooling.

The 1-gallon size has one or two mist outlets; the 4-gallon size one, two, three, or four outlets. To assure trouble-free operation, the unit is equipped with enclosed, pre-



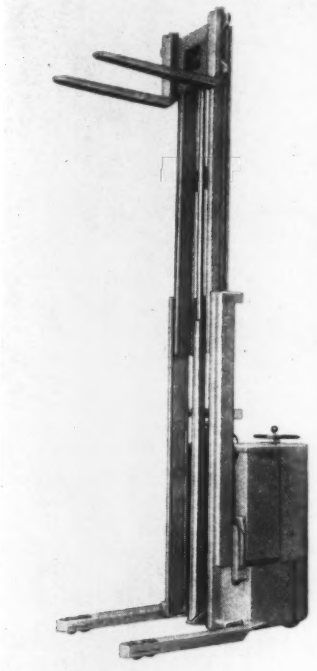
cision valve and fittings, and a fine-mesh outlet filter.

Designed for portability, it is easily detached and moved to another machine. No special coolants are required. *Write*: Kett Tool Co., 5055 Madison Rd., Cincinnati 27, Ohio. *Phone*: Bramble 1-0333

Truck Uses 24-volt System

This rider-type electric tiering truck is for use in narrow aisles. It has a 24-volt electrical system.

The Model MN provides fast material handling in extremely



cramped spaces. It has traveling speeds of 4.5 mph empty and up to 4.2 mph loaded. Lifting speeds are as much as 50 fpm empty, 42 fpm loaded.

Straddle type with standard forks, it is offered in capacities of 2000 or 3000 lb. *Write*: Dept. R8-17, Lewis-Shepard Products Inc., 125 Walnut St., Watertown 72, Mass. *Phone*: Watertown 4-5400

Drills at Any Angle

This 24 in. radial arm drill press works in any position at any angle.

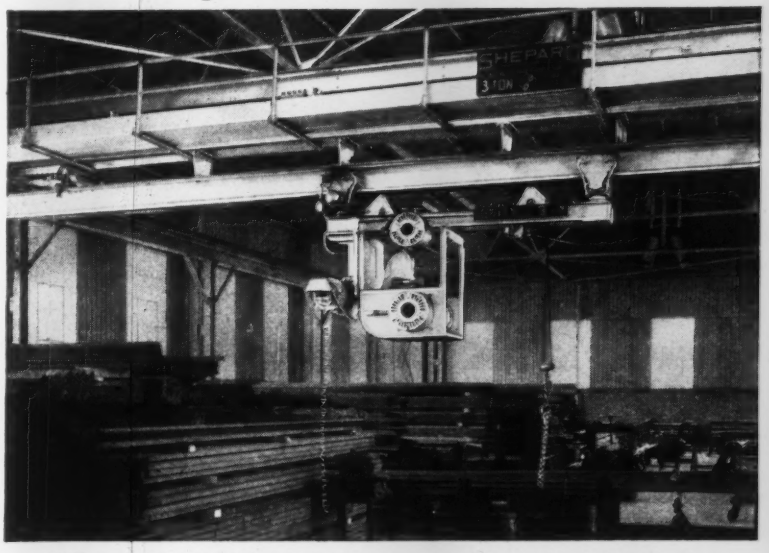
It is equipped with a locking key

SHEPARD NILES

MONORAIL HOIST

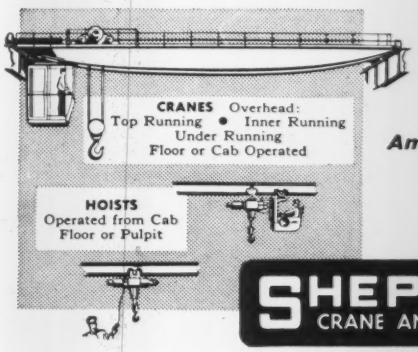
MORE ROOM

. . . for production and storage



Why move materials around men, materials and machines? Use the direct route — smoothly and safely — through air. Shepard Niles Monorail Hoists and Transfer Cranes put load handling overhead . . . eliminate costly ground level handling. Use the space saved for production and storage.

Rugged Shepard Niles hoists are available for constant or intermittent service. Choose from light, medium or heavy duty hoists equipped with cab or floor controls. Offered in fast, medium or slow speeds. Send for Monorail Hoist bulletin today . . . or ask that a Shepard Niles representative call — there's NO OBLIGATION.



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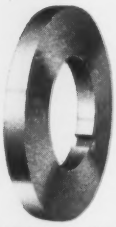
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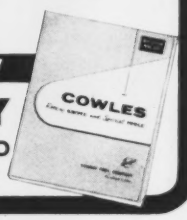
CARBIDE KNIFE

SPACER

Specify Cowles—world's largest manufacturer of rotary knives—to get more tonnage per grind, and cut production costs. Our exceedingly high standards of precision manufacture and exacting heat treatment assure utmost accuracy, efficiency and long life. Complete line including slitting, trimming and specially engineered knives, in our **Max-cut; Specialloy; Superalloy; Circle C** and **Super C** grades—also carbide knives — for any requirement. Prompt delivery. Engineering help on any job. **Let Cowles quote on your requirements.**

Write for Bulletin No. 571 Today!



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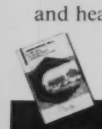
REPRESENTATIVES IN ALL PRINCIPAL CITIES

OUR SPECIALTY

LARGE NUTS BOLTS STUDS EYEBARS

1¾" through 8" Bolt Diameter

Of course, our fasteners aren't quite this big, but we do make the largest nuts, bolts, studs and eye bars in the metalworking industry. Save time and money by letting specialists fabricate your large fasteners of all types. Made in a factory devoted exclusively to their manufacture. Complete steel stocks. Modern testing and heat treating facilities.

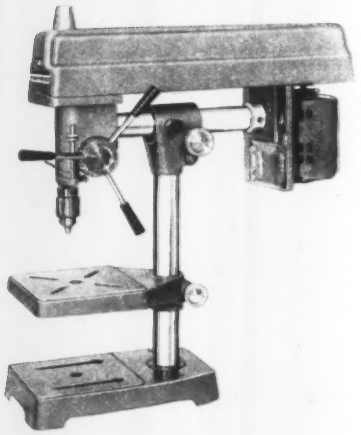


Send For The Dyson Large Fastener Catalog
36-page catalog contains dimensions, specifications and prices on Dyson large forged nuts, plus data on large eye bars, bolts and studs.

Joseph DYSON & SONS, INC.

5125 St. Clair Ave., Cleveland 3, Ohio • Telephone: HEnderson 1-6157

NEW PRODUCTS and equipment



switch and a safety adapter which grounds the press while in use. *Write*: Shopmaster Div., Energy Mfg. Co., Monticello, Iowa. *Phone*: 110

Stainless Protected

On-2 masking material for stainless panels and other fabricated parts is designed to protect surfaces from damage by handling, fabricating, shipping, storage, construction, and indefinite outdoor exposure.

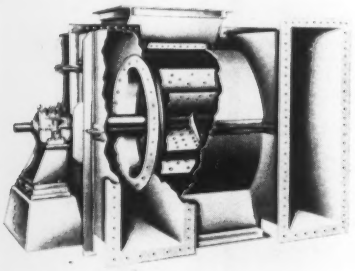
It is a laminate of plastic film, aluminum foil, neutral pH kraft, and a water base, pressure sensitive adhesive. *Write*: Onco Products Inc., 201 S. Main St., Middletown, Ohio. *Phone*: Garden 2-2151

Abrasive Gases Handled

The Series 7000, heavy duty, mechanical draft fans handle abrasive gases at elevated temperatures.

In ratings of 10,000 to 500,000 cfm and pressures up to 70 in. of water, these centrifugal units operate in a temperature range from 20 to 850° F.

Applications include steam boiler



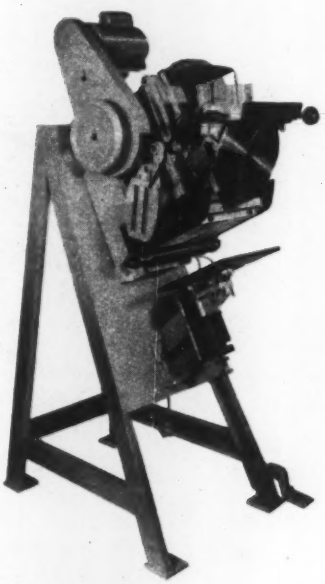
gas recirculation, fly ash precipitator purging, induced draft for waste heat boilers, and rotary kiln exhaust. *Write*: Dept. T-225, Sturtevant Div., Westinghouse Electric Corp., 200 Readville St., Hyde Park, Boston 36, Mass. *Phone*: Hyde Park 3-3700

Imprints Marked Clearly

Large imprints on flat surfaces can be made at production rates by the Model 103A.

Heavy ink coverage over the entire imprint assures attractive, readable, and durable marking.

This unit will mark a maximum



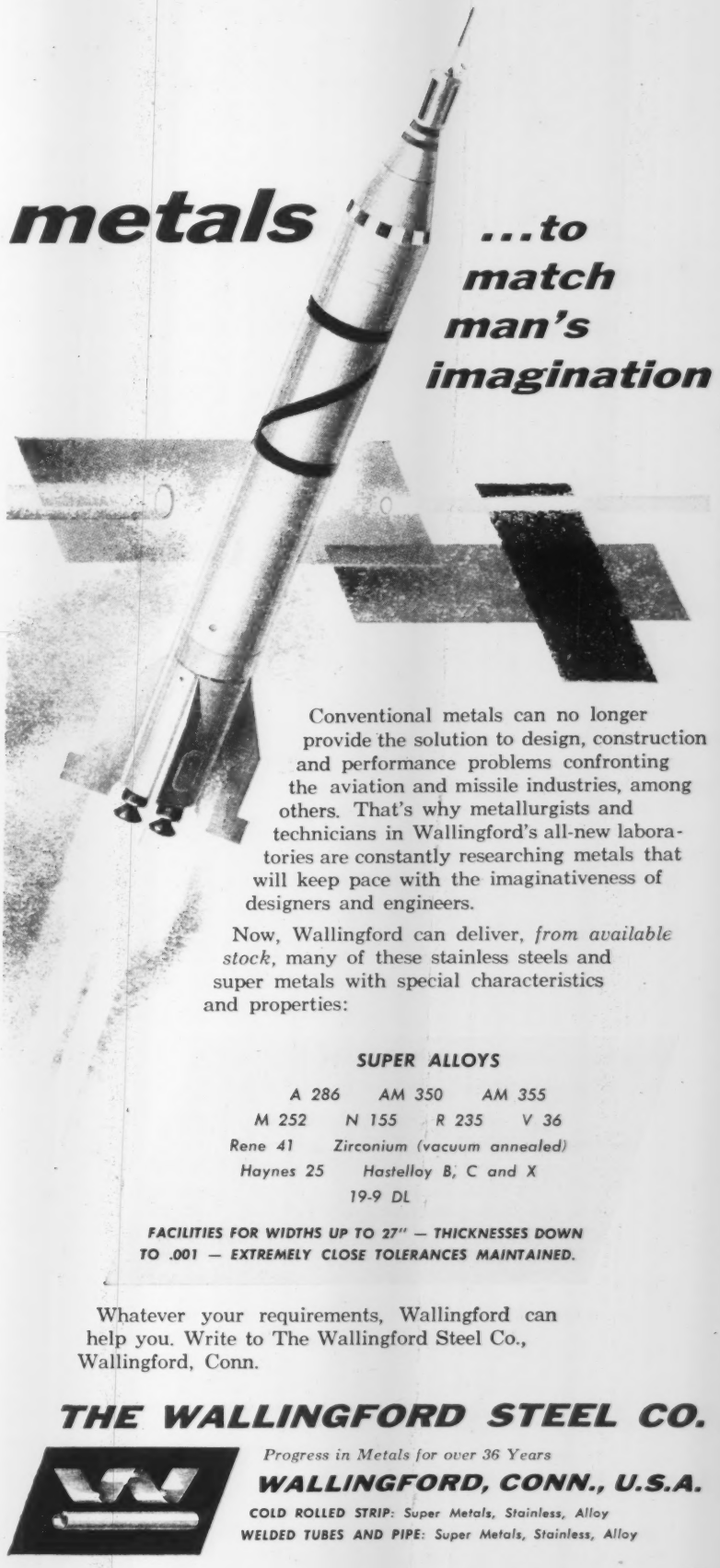
area of 9 x 11 in. on objects up to 1½ in. thick. It has a variety of holding fixtures for marking a wide range of sizes and shapes. *Write*: Markem Machine Co., Keene 78, N. H. *Phone*: Elmwood 2-1130

Pumps High Volume

The Kayo series paint pumps have been designed for high volume paint circulating systems. They deliver a steady flow of paint while operating at minimum speeds with less air consumption.

The air used in only 2 cfm a gallon at delivery pressure of 80 psi.

Paint can't damage the motor, since motor and pump sections are separate. One pump is capable of



Conventional metals can no longer provide the solution to design, construction and performance problems confronting the aviation and missile industries, among others. That's why metallurgists and technicians in Wallingford's all-new laboratories are constantly researching metals that will keep pace with the imaginativeness of designers and engineers.

Now, Wallingford can deliver, *from available stock*, many of these stainless steels and super metals with special characteristics and properties:

SUPER ALLOYS

A 286 AM 350 AM 355
M 252 N 155 R 235 V 36
Rene 41 Zirconium (vacuum annealed)
Haynes 25 Hastelloy B, C and X
19-9 DL

FACILITIES FOR WIDTHS UP TO 27" — THICKNESSES DOWN TO .001 — EXTREMELY CLOSE TOLERANCES MAINTAINED.

Whatever your requirements, Wallingford can help you. Write to The Wallingford Steel Co., Wallingford, Conn.

THE WALLINGFORD STEEL CO.

Progress in Metals for over 36 Years

WALLINGFORD, CONN., U.S.A.

COLD ROLLED STRIP: Super Metals, Stainless, Alloy
WELDED TUBES AND PIPE: Super Metals, Stainless, Alloy

Why MICROHONING AT EVINRUDE

trims costs . . . booms productivity . . . eliminates operations...improves quality

Evinrude Motors, Division of Outboard Marine Corporation, has replaced with Microhoning their former method of processing conn bores. Here's why:

MICROHONING INCREASES PRODUCTIVE CAPACITY 23 TIMES

Before Microhoning equipment was installed, Evinrude used diamond boring on wristpin and crankpin bores. Now! A per-man productivity comparison of the two processes shows: diamond boring, 300 rods in 40 hours; *Microhoning, 7,000 rods in 40 hours.*

Shown to the left is one of two lines of Microhoners. Each machine has: Microdial automatic stone-feed and stone-wear compensation; automatic stone-wear indicator; and Microsize Gage Ring automatic sizing control.

REDUCES OPERATIONS

Greatest cost-cutting contribution made by Microhoning is *elimination of three former operations:*

1. Re-milling locating faces of wristpin bores.
2. Straightening of rods after boring.
3. Milling oil hole grooves in wristpin bores.

ELIMINATES BRONZE INSERTS

The functional surface characteristics of Microhoned rod bores preclude the need for bronze bushings or shoes. Based on current production schedules, *the cost of millions of bronze inserts will be saved this year.*

ASSURES FEWER REJECTS

From a Microhoning run of 62,000, receiving 100% inspection on an air gage, only 200 rods required reprocessing. *This is a rejection rate of only 3/10 of 1%.*

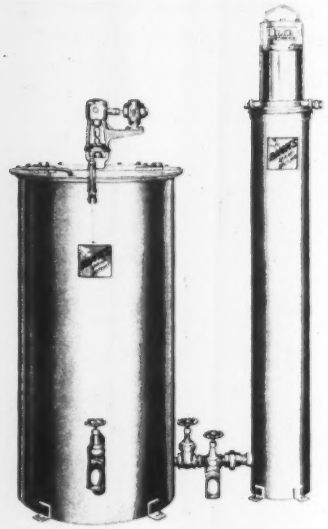
IMPROVES PRODUCT QUALITY

Microhoning is a low-velocity abrading process that leaves bore surfaces free of torn, smeared or burned metal. Benefit: *Rods that have precise, longer wearing bores.*

To learn more of why Microhoning provides efficient stock removal, closer tolerances and functional surfaces, write to:

MICROMATIC HONE CORP.
8100 SCHOOLCRAFT AVENUE • DETROIT 38, MICHIGAN

NEW PRODUCTS and equipment

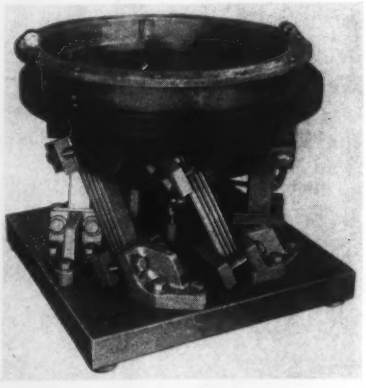


supplying paint through more than a mile of line, and can handle up to 55 spray painting sections. *Write:* Binks Mfg. Co., 3122 Carroll Ave., Chicago, Ill. *Phone:* Van Buren 6-4200

Laps 35-in. Pieces

The LP-4 vibratory lapping machine employs controlled electromagnetic vibration for fast lapping of metal parts as large as 35 in. in diameter and weighing more than 75 lb.

The drive produces 3600 amplitude and frequency regulated vibrations a minute from 60-cycle alternating current. This vibration produces a combined rotary and forward movement of the work over an abrasive cloth in the unit. *Write:* Syntron Co., 370 Lexington Ave., Homer City, Pa. *Phone:* 9-8011



NEW literature

Write directly to the company for a copy

Pillow Blocks

Catalog 447 describes a cast steel pillow block designed for rolling mill tables. Emphasis is placed on spherical roller bearings. SKF Industries Inc., Front Street and Erie Avenue, Philadelphia 32, Pa.

Flame Cutting

Booklet ADC 673 describes the Airco No. 20, radiagraph, flame cutting machine. The unit is a portable, motor driven, straight line type. Air Reduction Sales Co. division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y.

Pump Motor Manual

An instruction manual covering Verticlosed Type CFU (oil lubricated) and Type SCU (grease lubricated) motors outlines various factory developed procedures designed to minimize servicing efforts. U. S. Electrical Motors Inc., P. O. Box 2058, Los Angeles 54, Calif.

Fluid Pumps

Bulletin 47550 covers the Power Saver pump. Features are integral, infinitely adjustable, pressure unloading control with a range of 200 to 1100 psi, and adjustable volumes up to 3100 cipm. Oilgear Co., 1571T W. Pierce St., Milwaukee 4, Wis.

Air Conditioning

A 72-page catalog, No. 39ACW-55, makes possible accurate selection of central air conditioning units for conventional or multizone applications. Carrier Corp., Carrier Parkway, Syracuse, N. Y.

Binary Computer

A brochure describes the precision LGP-30 (single address, fixed point, binary, stored program, automatic) electronic computer. This desk size unit can be leased. Data Processing Div., Royal McBee Corp., Port Chester, N. Y.

Speed Measuring

Bulletin 35 covers a wide variety of hand and fixed types of speed measuring instruments. James G. Biddle Co., 1316 Arch St., Philadelphia 7, Pa.

Air-Break Contactor

High voltage air-break contactors, Type 256A, for control of large motors, primary switching in induction furnace transformers, and other high voltage applications, are described in Bulletin 14B7303B. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Industrial Batteries

A brochure describes Top Power industrial truck batteries. K. W. Battery Co., Skokie, Ill.

Industrial Lubricants

Bulletin BK-19-a provides a pretested list of correct lubricants for various types of equipment. Keystone Lubricating Co., 3100 N. 21st St., Philadelphia 30, Pa.

How MICROHONING AT EVINRUDE trims costs . . . booms productivity . . . eliminates operations...improves quality

By installing Microhoning equipment to process wristpin and crankpin bores in conn rods, Evinrude Motors, Division of Outboard Marine Corporation, realized considerable savings. The following comparison with previously used diamond boring shows how Microhoning cut time, materials and costs:

MICROHONING BOOSTS PRODUCTIVE CAPACITY 23 TIMES

Diamond Boring Production Per Man: 300 rods in 40 hours.

Microhoning Production Per Man: 7,000 rods in 40 hours.

Several rod sizes are Microhoned on the same equipment — bore diameters range from .874" to 1.500", bore lengths from .815" to 1.011". Microhoning removes .005" stock from wristpin bores in about 24 seconds (floor-to-floor) and generates a controlled finish of 25 to 30 microinches as specified. On crankpin bores, Microhoning removes .0005" stock to generate specified finish of 3-5 microinches in 17 seconds (F-T-F). Tolerances on both bores are held to .0001" for roundness and straightness, and .0004" on diameter.

Close-up of double unit Microhoner shows operator checking a wristpin bore on air gage. Microdial, which automatically compensates for abrasive wear, is shown in center of photo.

ELIMINATES THREE OPERATIONS

1. Former re-milling of locating face on wristpin bore is eliminated — *Microhoning's float principle maintains original bore location.*

2. Straightening after rough boring is no longer required — *Microhoning tool follows neutral axis of bore.*

3. Milling oil hole grooves in wristpin bores is eliminated — *Microhoning generates a cross-hatch pattern that provides built-in oil reservoirs.*

SAVES COST OF MILLIONS OF BRONZE INSERTS PER YEAR

Microhoning's low-velocity abrading, with efficient cutting over a wide area, produces surfaces free of torn, smeared or burned metal.

Result: Precise bores having surfaces that resist galling and flaking.

Benefit: User obtains longer wearing rod bores and a functional supplanting of bronze inserts.

For further information on Microhoning process or to receive movie "Progress in Precision", write to:

MICROMATIC HONE CORP.
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FOR OPTIMUM RESULTS

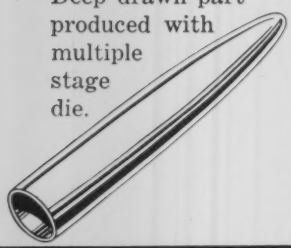
J&L STAINLESS and STRIP DIVISION

restricted specification cold rolled strip steel

Oftentimes, sound selection of cold rolled strip steel should involve more than making a choice of one or more readily available, standard specifications. To achieve best fabricating results, or to improve manufacturing performance and end-product superiority, may require the employment of strip steel specially designed for your particular use. J&L Restricted Specification Strip Steel is that kind of product. As an example look at this . . .

TYPICAL APPLICATION . . .

product	specification	results
Deep drawn part produced with multiple stage die.	Low Carbon Deep Drawing Steel Size—3″ x .010 Analysis—AISI—1010 Temper—Deep drawing, non-scalloping Finish—#2 Tolerance ± .0002 including crown Width Tolerance ± .002 Coil Size—250# per inch width min.	Improved yield. Improved die life. Reduced finishing operations after drawing. Less quality control cost.

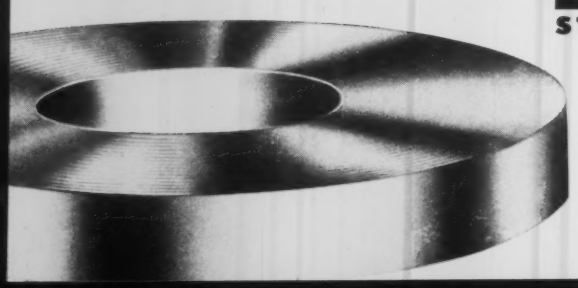


J&L STAINLESS and STRIP DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:

Low Carbon	Electrolytic Zinc, Tin, Copper & Brass Coated
High Carbon	
Tempered Spring Steel	Alloy
Molten Zinc Coated (JalZinc)	Stainless
	Painted

The experience, facilities and accumulated know-how of a specialized organization devoted exclusively to strip steel processing are available to work with you. In this clearing house of strip steel engineering and application information, it's a good bet there is something of value for you. Your inquiry will get our immediate, interested attention.

STRIP STEEL



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STEEL CORPORATION
STAINLESS and STRIP DIVISION
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FORMERLY THE COLD METAL PRODUCTS COMPANY

Market Outlook

110 Million Tons: Goal in '59

STEELMAKERS will operate near capacity during peak weeks next year. That's in sharp contrast to the highest weekly rate so far in 1958—last week's 66.5 per cent, up a point and a half from the previous week. Production probably won't exceed 75 per cent of the maximum during the rest of this year. The 1959 production goal is 110 million tons of steel for ingots and castings.

Despite automotive labor troubles, this year's output will be at least 82 million tons. Reason: Industrial production is on the upgrade, forcing many customers to replenish low inventories. About 59 million ingot tons of steel will be made during 1958's first three quarters. Even if operations are frozen at their current rate, fourth quarter output will be 23 million tons, enough to make the year's total reach 82 million.

Fourth quarter operations could average 73.5 per cent of capacity. That would boost the 1958 total to 85 million tons.

AUTOMOTIVE IMPACT—Steelmen estimate that 18 to 20 per cent of their fourth quarter shipments will go to automakers. (During the first seven months of the year, only 15.1 per cent of the industry's output went to the car manufacturers.) They're expected to buy about 9.2 million tons of steel in 1958 and consume 10.4 million, taking 1.2 million tons out of inventory. Next year, they expect to produce 5.5 million cars and 1.1 million trucks. They'll buy about 13.6 million tons of steel and consume about 12.8 million, adding 800,000 tons to their stockpiles.

INVENTORIES WILL RISE—From August, 1956, until the spring of 1957, the industry shipped consumers about 12 per cent more steel than they were using. When business prospects began to deteriorate and inventories became unwieldy, users ate into stocks. From May, 1957, to September, 1958, they bought about 12 per cent less steel than they were chewing up—reducing inventories from 24 million tons to 12 million. As business activity accelerates, they'll revert to cautious stockpiling.

SPRING BUILDUP—During the second quarter of 1959, consumers will probably start building inventories with a vengeance. They'll recall David J. McDonald's words at the United Steelworkers' Atlantic City convention: "If the steel industry wants a long strike, I guarantee the USW will give it to them." By May, steelmaking operations will probably be in the high nineties.

SERVICE CENTER SALES UP—August was the best month of the year for the nation's steel service centers. Shipments from warehouses were 5 to 10 per cent better than those of July. September promises continued modest improvement, with most customers demanding rush deliveries. The strongest products are hot rolled, cold rolled, and galvanized sheets; the weakest are plates, bars, and structurals. Service center inventories have been trimmed from 3.7 million tons to 3.5 million, but there's little likelihood of a buildup during the fourth quarter. Although they've revised their quantity discounts to make large orders more attractive, they report few gains. Customers won't buy from warehouses as long as they can catch the mill rollings.

SCRAP HITS HIGH—STEEL's scrap composite rose 33 cents per ton last week to $43—the highest since Sept. 25, 1957.

WHERE TO FIND MARKETS & PRICES

	News	Prices
Bars, Merchant	116	123
Reinforcing	116	124
Boiler Tubes	...	126
Clad Steel	...	129
Coke	...	131
Coal Chemicals	...	131
Charts:		
Finished Steel	...	121
Ingot Rate	120	
Scrap Prices	...	135
Comparisons	...	121
Contracts Placed	141	...
Contracts Pend.	142	...
Electrodes	...	131
Fasteners	...	126
Ferroalloys	141	132
Fluorspar	...	131
Footnotes	...	126
Imported Steel	...	131
Ingot Rates	120	...
Metal Powder	...	131
Nonferrous Met.	138	140
Ores	...	131

	News	Prices
Pig Iron	135	130
Piling	...	123
Plates	117	123
Plating Material	...	141
Price Indexes	...	121
Producers' Key	...	124
R.R. Materials	...	126
Refractories	...	131
Scrap	134	136
Semifinished	120	123
Service Centers	119	130
Sheets	114	124
Shipments	115	...
Silicon Steel	...	125
Stainless Steel	...	129
Strip	114	125
Structurals	119	123
Tin Mill Prod.	...	125
Tool Steel	...	129
Tubular Goods	117	129
Wire	117	125

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put *Automation* In Your Deep-Draw Lubrication . . . . . .

"Go automatic" with a continuous high-speed drawing-lubricant system from Pennsalt. You'll get superior drawing from lubrication that is always exact . . . high production rate with no interruptions from raw stock to press bed.

Pennsalt automatic systems eliminate chemical waste, provide clean working area, reduce excessive handling . . . and compact design saves valuable floor space.

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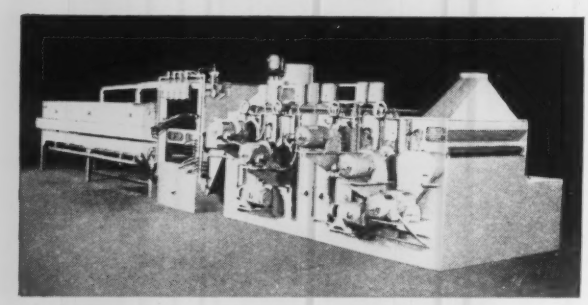

Completely automatic White-Roth deep draw lubrication system processes sheets, strip, plate, blanks and other forms at speeds up to 100 feet per minute.

Pennsalt Systems Feature . . .

White-Roth metal preparation machines . . . exclusive from Pennsalt . . . for automatic cleaning of stock, application of undercoatings and lubricants, and drying. Automatic loading and unloading available.

Pennsalt's complete line of metal processing chemicals . . . including Drawcote®, the outstanding *dry* drawing lubricant, and famous Foscoat®, valuable in severe draws on heavy stock.

Call or write Pennsalt today for a copy of Technical Bulletin MP-307, or for a consultation and quotation on your requirements. METAL PROCESSING DEPARTMENT 630, PENNSALT CHEMICALS CORPORATION, THREE PENN CENTER, PHILADELPHIA 2, PA.

Automatic Spray Coaters • Power Spray Washers
Automatic Pickling Machines • Phosphatizing Machines • Complete Finishing Systems
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A better start for your finish

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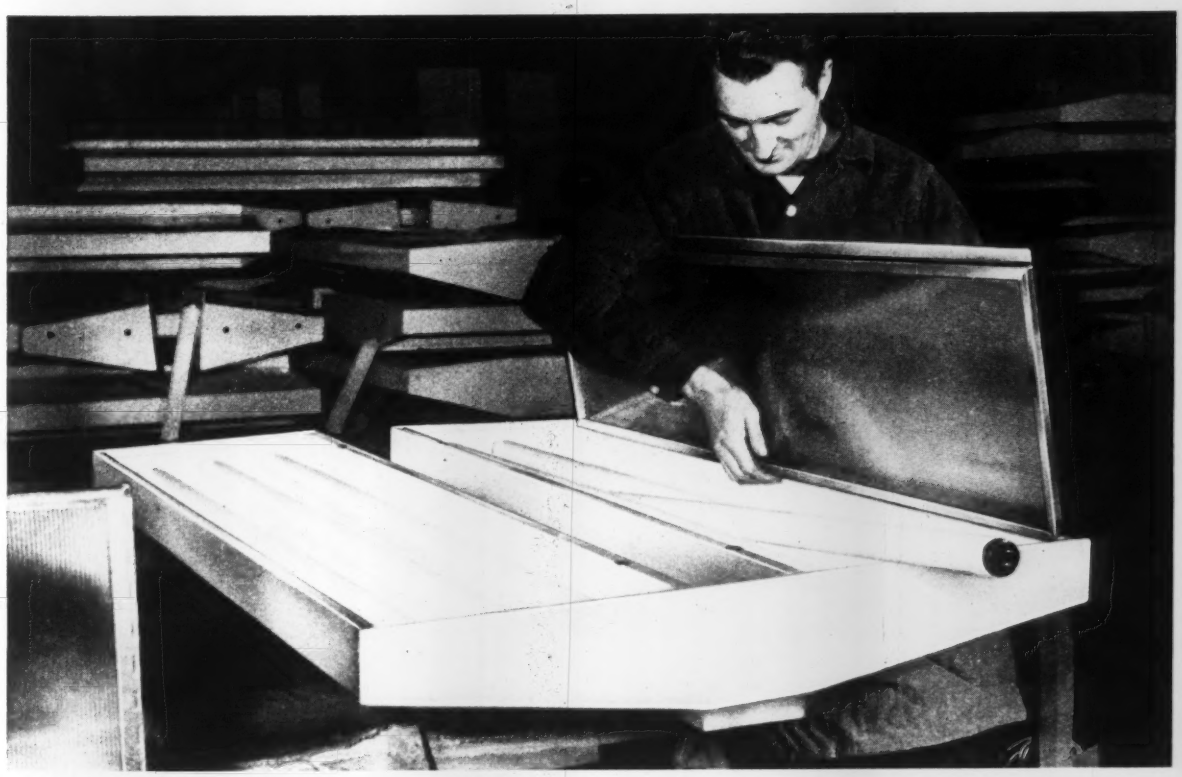

Armco Steel Corp.

More Use for Coated Steel

U. S. Steel will join Armco as a producer of aluminized steel sheets. One reason for the entry: The Automotive industry's growing acceptance of the product

ARMCO STEEL CORP., sole producer of aluminum coated steel sheets since developing them in 1939, will soon have a competitor.

U. S. Steel Corp. will begin production of cut lengths at its Gary (Ind.) works early in the fourth quarter, informed sources tell STEEL. (The corporation has only announced that it will make sheet coils at its Irvin works, Dravosburg, Pa., starting in the second quarter of 1959.)

Big Steel's decision to jump into the market ahead of schedule is believed to have been triggered by the automotive industry's growing acceptance of aluminized mufflers and tailpipes. Although Armco is unwilling to disclose production or sales, it reports that "the use of aluminized steel is showing a steep upward trend." (Its Butler, Pa., plant is said to be running close to capacity, estimated at about 5000 tons a month.) Says a company spokesman: "We're enthusiastic about the future of this product."

Price Outlook—Although about a third more expensive than galvanized steel, aluminum coated sheets are winning converts. Reason: They offer superior resistance to heat and corrosion. Within a few years, aluminized steel may be competitive with galvanized products on a first cost basis. Zinc may become less plentiful, forcing prices up. Aluminum output will be increased, holding prices down.

Made by a continuous hot-dip process, aluminized sheets combine the strength of carbon steel with aluminum's resistance to atmospheric corrosion, good heat reflectivity, and heat resistance. Producers say they're economical because: 1. They're less expensive than heat-resisting alloys. 2. They need no plating or special paint for protection. 3. They can be used in thinner gages than other light metals.

Armco's Products — Armco offers aluminized sheets in two grades: Type 1 ("for its economical resistance to a combination of heat and corrosion") and Type 2 ("for its excellent resistance to atmospheric corrosion"). Type 1 is coated on both sides with ½ ounce of aluminum per square foot. The coating thickness is about 0.001 in. (thicker than long terne and tin plate and about as thick as the standard galvanized coating). It is being used

principally in mufflers, kitchen and laundry appliances, industrial ovens, incinerators furnaces, combustion chambers, burner shields, casings, and reflector plates.

Coated with porcelain enamel, it's also applied in curtain wall construction. (The enamel provides color and durability. In most cases, low temperature, one coat, one fire enamels are used.) Enameled aluminized steel is relatively inexpensive. Reasons: 1. The base material is less expensive. 2. Aluminum must be enameled on both sides to retain flatness. (Normally, only the exposed side of aluminized steel is enameled.)

At present, the costs of porcelain enameled carbon and aluminized steels are about the same. Armco expects mounting volume to make the aluminized product cheaper than carbon in the "not-too-distant future."

Uncoated stainless steel is slightly more costly than porcelain enameled aluminized steel, but the two aren't regarded as competitive in curtain wall applications. They're complementary, says Armco, since porcelain enamel provides color, and stainless is used for contrasting accent or trim.

Porcelain enameled aluminized steel and anodized aluminum are roughly comparable in price.

Type 2—The weight of the aluminum coating applied to both sides of Armco's Type 2 sheets is 1 ounce per square foot. About 0.002 in. thick on each side, it's twice as heavy as a commercial galvanized coating. Type 2 is used primarily in "outdoor" products, such as building panels, roof decking, ventilators, agricultural implements, rolling doors, awnings, truck panels, and signs. Armco supplies Type 2 in corrugated sheets and Types 1 and 2 in welded tubing.

Big Steel's Plans—At its Irvin works, U. S. Steel is altering a 48 in., continuous, hot dip galvanizing line so that it will produce both zinc and aluminum coated products. Half-ounce and 1 ounce coatings will be offered. The corporation won't estimate its first year production but says it will supply "commercial quantities on a continuing basis." At present, it has no plans to produce corrugated sheets or welded tubing.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 124 & 125

Activity in the sheet markets has been picking up at an encouraging rate in recent weeks, but the outlook depends a lot on how labor negotiations in the auto industry work out. If a prolonged strike is avoided, sheetmakers say the fourth quarter will be the best this year.

Further stiffening in demand from manufacturers of household appliances is reported. These consumers not only find demand for their own end-use products heavier but they also need stocks.

Construction Active—Substantial sheet tonnage is moving into construction channels. Galvanized sheet deliveries range five to six weeks. Miscellaneous requirements also are substantial. A Cleveland sheet seller reports his firm's orders are about 70 per cent of what they were one year ago. That marks a definite improvement in the past month, though it's well below boom volume. This producer has some good orders from Fisher Body and Ford for late September and early October delivery.

45 master keys to

available through representatives and distributors in over

Demand for cold rolled and galvanized sheets tops that of all other products in the Chicago area. Inland Steel is booked up to November on both items, but shipments can be had for earlier delivery from some other district producers.

Hot-rolled sheets are following the pattern of cold rolled but at a slower pace. Narrower widths can be had in two to three weeks, while over 40 in. takes four weeks.

Warehouses are ordering hot-rolled a little more freely.

Extras Reduced — At least one leading producer of sheets has reduced drawing extras on enameling iron. The extras are now 25 cents on all grades; previously they were 45 cents on 21 gage and heavier and 55 cents on 22 gage and lighter.

July Steel Shipments Drop

Shipments of finished steel products totaled 4,081,744 net tons in July, reports the American Iron & Steel Institute. That's down 1,664,473 tons from the 5,746,217 moved in June, and off 1,795,389

Shipments of Steel Products—July, 1958

(All grades; net tons)

Products	July, 1958 Shipments—Carbon	Alloy	Stainless	Totals First 7 Mo.—1958	1957
Ingots, etc.	4,802	6,661	1,155	153,868	299,726
Blooms, slabs, etc.	37,144	11,618	1,064	613,511	1,649,792
Tube rounds	1,013	129	2	5,120	50,058
Skelp	6,154	.....	.....	54,065	99,686
Wire rods	48,555	1,108	250	49,913	461,832
Structurals (heavy)	261,484	2,239	4	2,307,247	4,024,651
Steel piling	31,601	.....	.....	261,940	352,115
Plates	293,468	25,108	1,956	3,070,283	5,876,734
Rails (standard)	28,542	.....	.....	366,901	848,119
Rails (all other)	4,742	.....	.....	25,726	54,401
Joint bars	1,284	.....	.....	23,564	60,164
Tie plates	6,140	.....	.....	77,365	185,849
Track spikes	3,043	.....	.....	26,690	54,790
Wheels	6,027	29	.....	98,865	225,753
Axles	1,511	3	.....	51,856	124,257
Bars (hot rolled)	286,650	55,495	2,044	2,929,843	4,834,222
Bars (reinforcing)	175,425	.....	.....	1,182,839	1,506,085
Bars (cold drawn)	53,110	7,745	2,630	535,945	831,468
Tool steel	521	3,370	.....	38,063	62,117
Standard pipe	167,902	81	.....	1,251,388	1,714,441
Oil country goods	64,179	10,748	.....	620,332	1,814,620
Line pipe	219,972	11	.....	1,631,573	2,531,355
Mechanical tubing	28,014	6,235	224	296,504	498,640
Pressure tubing	12,900	1,884	960	144,001	268,194
Drawn wire	149,365	1,750	1,432	1,305,673	1,616,163
Nails & staples	30,088	.....	1	255,090	291,988
Barbed wire	2,732	.....	.....	41,279	46,080
Woven fence	7,195	.....	.....	116,457	157,873
Bale ties, etc.	4,803	.....	.....	46,875	39,045
Black plate	45,348	.....	.....	351,467	397,159
Tin & terne plate HI	45,481	.....	.....	267,345	501,153
Tin plate—electro	422,776	.....	.....	3,022,674	3,164,095
Sheets (hot rolled)	399,170	12,084	2,410	3,175,001	4,913,506
Sheets (cold rolled)	664,247	3,014	7,817	5,102,126	6,918,295
Sheets (galvanized)	239,883	.....	.....	1,506,324	1,459,274
Sheets (other coated)	13,779	.....	.....	88,169	117,640
Elec. sheets & strip	1,488	29,373	.....	244,852	401,200
Strip (hot rolled)	61,631	1,037	358	509,462	867,777
Strip (cold rolled)	45,126	1,400	10,020	507,805	706,975
Totals (1958)	3,877,295	172,122	32,327	32,772,920	.....
Totals (1957)	5,504,348	328,972	43,813	.....	50,162,861

Data from the American Iron & Steel Institute.

cost-saving corrosion control

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What's more, you get predictable performance in all *full finished* Carpenter corrosion-resistant tubing and pipe . . . it fully meets the high quality requirements for heat exchanger service. No short-cuts . . . no false economy . . . just the kind of on-the-job service that saves you operating dollars.

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Whatever your corrosion problem . . . ordinary or unusual . . . you'll get the right answer at Carpenter—"The House of Corrosion Control". You'll benefit from over 30 years' experience in helping industries and equipment builders to solve a vast assortment of problems.

Readily available to you are data on any specific alloy you're interested in, or our Selecting and Buying Guide to your 45 master keys to cost-saving corrosion control. Contact our nearest office or authorized distributor, or write direct to The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

40 cities . . . coast to coast

stainless tubing & pipe

from the 5,877,133 tons shipped in July a year ago.

The movement in the first seven months this year amounted to 32,772,920 net tons, down 17,389,941 from shipments of 50,162,861 in the like period last year.

Principal products shipped in the first seven months this year were: Cold-rolled sheets; hot-rolled sheets; plates; electrolytic tin plate, hot-rolled bars, and structural shapes. (See table, page 115, for details.)

The chief market groups during the period were: Warehouses; construction; automotive; containers; contractors' products; machinery, etc.

Shipments to all market classifications were down compared with a year ago, except agricultural. That outlet accounted for 672,078 net tons in the January-July period this year, against 649,470 in the like period last year.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 123

Highway work and other public construction projects are absorbing a heavy volume of reinforcing steel. But fabricators are competing actively for new business with seasonal slackening in prospect over the remainder of the year.

In Texas, the market is still dominated by imported material. Elsewhere, competition from imported bars is felt, and domestic sellers think the situation will get worse.

In the Pacific Northwest, awards and production are closely balanced. A good volume of orders for bars is reported, mostly small lots. Not much change is expected through the fourth quarter.

Naval District No. 13 has called a briefing conference Sept. 24 at the Puget Sound Navy yard prior to taking bids on a $30-million drydock. Reinforced construction is indicated.

Steel Bars . . .

Bar Prices, Page 123

Demand for commercial steel bars continues to improve gradually. Orders are diversified. Deliveries on hot bars range two to four weeks (depending on mill cycles) and on hot alloy bars, three to five weeks. Shipments on cold finished, both carbon and alloy, remain easy, with tonnage frequently available from mill stocks.

Hot bar demand in the East, while not greatly improved, is fanning out in a number of consuming directions. But demand from converters, railroads, fastener manufacturers, and machinery builders remains disappointing.

New England sellers say fourth quarter demand is heavier for hot bars, but as with cold finished, third quarter volume showed little gain. Consumers have been able to operate substantially from inventory but are ordering a little more actively for October delivery. Orders from arsenals and other government shops are a little better than they were.

Carbon bars are selling well in the Chicago area, particularly the smaller sizes. Demand from farm equipment makers is off seasonally, but automotive buying is still rising.

Bliss & Laughlin Inc., Harvey, Ill., reports its September shipments of cold-finished bars will exceed those in June, the previous best month this year. Third quarter shipments should be about 3 to 4 per cent higher than they were in

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

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miller WELDERS

the second quarter, but they still will be about 15 per cent below tonnage in the corresponding quarter last year. Orders have improved slowly but steadily, and, barring an auto strike, that pattern seems likely to continue.

Wire . . .

Wire Prices, Pages 125 & 126

Wire products are moving a little better in both the merchant and manufacturers classifications. Automotive requirements for fasteners is sparking orders for manufacturers items. Demand is also strong for road and pipe mesh, though building mesh is moving sluggishly.

All grades of manufacturers' wire are selling in satisfactory volume in the St. Louis district. No boom is noted, but there is some booking of automotive upholstery wire. In New England, a gradual stepping up of orders for finished wire is noted. October bookings will be 10 to 15 per cent over those in September, with high carbon specialties and manufacturers' wire sharing in the mild improvement.

Foreign competition, particularly from Japan, is an upsetting factor in the Pacific Coast markets.

Plates . . .

Plate Prices, Page 123

The post-Labor Day upturn in plate demand has been disappointing. Producers had anticipated a more spirited buying spurt than they've experienced. Still, business is noticeably better than it was during the summer, with shipwork and heavy construction prominent in new order volume.

Except for shipbuilding, including naval tonnage, there is little forward buying. Railroad needs continue limited. Tank requirements are off, and heavy industry buying is down substantially from that of a year ago.

Pittsburgh platemakers report September bookings are no better than those in May and June. They don't think shipments this month will top those in August, but they're looking for a slow, steady improvement during the fourth quarter. By April, 1959, it's said, low inventories and the threat of a steel strike should result in strong demand and near-capacity operations.

Plate fabricators are holding off placing steel orders until they've confirmed bookings in hand. Then they seek prompt shipments.

Delivery promises of two to three weeks are still reported on sheared plate. On strip-plate, shipments are a little more extended than they were, running around three weeks. That's due more to stronger demand for sheets than for plates. Universal plates are available within a week to ten days. For some alloy plates, as much as eight weeks are required for delivery.

Tubular Goods . . .

Tubular Goods Prices, Page 129

"More of our old customers are showing up on the books," reports a Pittsburgh producer of oil country goods. "We don't expect to break any sales records this month, but the outlook is improving. We've already booked almost as much tonnage as we shipped in August."

Most of the orders are for 4½, 5½, and 7-in. OD casing and tubing, but one mill reports it has booked orders for a few heavy wall

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7-in. items. Customers are insisting on immediate deliveries from downriver stocks. They're ordering ahead only on specialty items.

Pipe ranging from ½ to 2 in. is meeting stiff competition from imported material on the West Coast. It's coming mostly from Japan. Sellers in San Francisco estimate that about 75 per cent of plumbing jobbers in the area are taking imported pipe, mostly because their customers are pressing them for lower prices.

Distributors . . .

Prices, Page 130

The expected post-Labor Day upturn appears to be getting under way in some districts. Fabricating work and general construction are picking up steam. Demand for all warehouse items has shown general improvement.

Inventories at some steel service centers are spotty. Many distributors are placing significant orders to round out their stocks.

Revisions of price schedules have been spotty as to products and districts. In Philadelphia, for instance, distributors have not revised prices on hot-rolled carbon products. In St. Louis, distributors revised prices last week on hot and cold rolled sheets.

A few steel service centers in the Los Angeles district have booked some steel imports; others say they will increase imports soon.

Structural Shapes . . .

Structural Shape Prices, Page 123

While a good assortment of miscellaneous work continues before the market, structural fabricators are competing keenly for new tonnage. Despite the summer mill price increase on plain material, fabricated material prices are no stronger than they were.

Highway work dominates activity in the New York area, with a leading award involving 7000 tons for a state viaduct in the Bronx. Miscellaneous demands include a 10,000-ton Western Electric office building in lower Manhattan.

Fabricating shops in New England are keenly competitive in estimating new bridge tonnage. Original quotations are frequently shaded under pressure from buyers. More district shops have worked

MORE THAN 8000 STANDARD SPECIFICATIONS have been established by Judson L. Thomson Mfg. Co. for the five basic types of rivets: semi-tubular, deep-drilled, bifurcated (split), outside prong, and shouldered.

Seventeen Key Questions Simplify Value Analysis of Fasteners

By KENNETH E. JOY, General Sales Mgr.
Judson L. Thomson Manufacturing Co.

In approaching the problem of selecting fasteners that provide the greatest utility per unit of cost, it pays to be completely objective. Playing favorites or rejecting the old for the new can often prove costly. An unbiased approach to the analysis of fasteners, however, can slow down a project unless you have a system for quickly evaluating the many possible alternatives.

Such a system must have a starting point. May I suggest rivets as the logical start? There are two reasons why. As cold-formed fasteners, mass-produced at rates ranging from 75 to 400 a minute, rivets cost less than most other fasteners. Machine-set at rates as high as 180 a minute, they keep assembly costs at a minimum.

You can simplify the evaluation of rivets by answering the following seventeen questions:

1. Have you considered rivets for all assemblies that call for permanent fastening?
2. Where welding is now being used, can rivets plus gaskets or sealants provide comparable air tightness or water tightness at lower cost?
3. Where stapling is being used, can the heads of rivets add decoration or utility at little or no extra cost?
4. Where stitching is being used, can rivets replace or supplement it for greater strength?
5. Can rivets replace expensive removable fasteners where assembly is not absolutely essential?
6. Can self-piercing rivets — deep-drilled or bifurcated (split) — eliminate the cost of drilling or punching holes in the material to be assembled?
7. Can the addition of caps or burrs (washers) under the clinch of rivets permit their use on brittle or easily torn materials now fastened or joined a more expensive way?
8. Can the use of pneumatic or hydraulic rivet-setting machines which control impact allow the use of rivets for assembling fragile materials?
9. Can a change in assembly design provide access for machine-set rivets to replace more costly fasteners?
10. Can a change in assembly sequence introduce the speed and economy of riveting?
11. Can special cold-formed rivets replace more costly parts as pivots, contacts, stud followers and the like?

If the above questions lead to the decision that you can switch from other fasteners to rivets, the following questions will help you evaluate sources of rivets.

12. Does the rivet manufacturer make all kinds of rivets to give you complete freedom of choice?
13. How many standard specifications does the rivet manufacturer offer to lessen the possibility of more costly specials?
14. When special rivets are necessary does the manufacturer have experienced engineers who can solve new problems fast?
15. Does the rivet manufacturer also make machines to assure trouble-free assembly at lowest cost?
16. Does the supplier concentrate his engineering, production and quality control talent in one plant for expediting delivery of top quality rivets?
17. Does the supplier stock adequate supplies of most-wanted standard rivets in conveniently located points?

Free "Fastener Fact File"

This new manual of rivet and rivet setting machines provides complete information needed for efficient value analysis of fasteners.

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JUDSON L. THOMSON MFG. CO., WALTHAM 54, MASS.

down inventories of plain material and are placing heavier orders. They are not building stocks to former levels, however.

"The September impetus on wide flange beams hasn't been as great as we hoped," says a Pittsburgh supplier. We'll ship more than we did in July but less than in June, when hedging helped."

Demand is fair at Cleveland and other midwest points. Some highway work in the Cleveland area has been running into delayed shipments of fabricated structurals. Over-all, the market situation is expected to begin slackening seasonally within the next few weeks. Fabricators' backlogs are declining.

Demand for roadbuilding steel will be spurred in Texas next month when the Texas Highway Department begins work on five major projects in the Houston area, costing nearly $12 million.

Semifinished Steel . . .

Semifinished Prices, Page 123

Steel production continues to rise. Last week the ingot rate went up another 1.5 points to 66.5 per cent of capacity, the highest level since last December.

At Chicago the ingot rate is estimated at 76 per cent, highest weekly average for the year to date. Inland Steel is approaching full recovery from its recent strike.

Inland reports its deliveries on tin plate, black plate, and blue plate extend into October. Other deliveries quoted by Inland are: Universal mill plates, one to two weeks; safety plates and 76-in. mill plates, three to four weeks; 100-in. mill plates, two to three weeks; rail steel bars, shapes, and bands, two to four weeks.

Steel Production Gains

Output of 7,285,000 net tons of ingots and steel for castings in August was the highest monthly total reported so far this year, reports the American Iron & Steel Institute. Comparisons: 6,420,405 tons in July and 9,233,890 in August, 1957.

Production in the first eight months this year was 51,457,892 tons, down sharply from the 78,726,169 tons produced in the like 1957 period.

The institute's index of steelmaking for August was 102.4 (in terms of the basic index of average production during 1947-49). It compares with 90.3 in July and 129.8 in August a year ago.

Based on the Jan. 1, 1958, capacity rating of 140,742,570 net tons of steel annually, steelmaking facilities were utilized at an average of 60.9 per cent during August, vs. 53.7 per cent in the preceding month.

Steel Ingot Production—August, 1958

Period	—OPEN HEARTH— Net tons	Per cent of capacity	—BESSEMER— Net tons	Per cent of capacity	—ELECTRIC— Net tons	Per cent of capacity	—TOTAL— Net tons	Per cent of capacity
1958								
January	6,085,124	58.6	121,338	35.5	547,440	44.8	6,753,902	56.5
February	5,252,112	56.0	81,597	26.4	448,614	40.6	5,782,323	53.6
March	5,598,944	53.9	122,317	35.8	533,361	43.6	6,254,622	52.3
1st Qtr.	16,936,180	56.2	325,252	32.8	1,529,425	43.1	18,790,857	54.1
April	4,875,619	48.5	109,433	33.1	547,939	46.3	5,532,991	47.8
May	5,602,123	53.9	110,366	32.3	588,670	48.2	6,301,159	52.7
June	6,378,942	63.4	88,125	26.6	660,413	55.8	7,127,480	61.6
*2nd Qtr.	16,856,684	55.3	307,924	30.7	1,797,022	50.1	18,961,630	54.0
*1st 6 Mo.	33,792,864	55.7	633,176	31.7	3,326,447	46.6	37,752,487	54.1
*July	5,712,587	55.0	114,218	33.4	593,600	48.6	6,420,405	53.7
†August	6,479,000	62.4	134,000	39.2	672,000	55.0	7,285,000	60.9
1957								
January	9,829,691	99.0	294,839	77.1	884,232	86.5	11,008,762	97.1
February	8,898,671	99.2	227,682	80.4	810,853	87.8	9,987,206	97.6
March	9,442,164	95.1	275,156	71.9	871,754	85.2	10,589,074	93.4
1st Qtr.	28,170,526	97.7	847,677	76.3	2,566,839	86.4	31,585,042	96.0
April	8,820,328	91.8	231,731	62.6	762,721	77.1	9,814,780	89.5
May	8,842,707	89.1	201,864	52.8	747,752	73.1	9,792,323	88.4
June	8,498,903	88.4	210,915	57.0	681,584	68.9	9,391,402	85.6
2nd Qtr.	26,161,938	89.8	644,510	57.4	2,192,057	73.0	28,998,505	87.2
1st 6 Mo.	54,332,464	93.7	1,492,187	66.8	4,758,896	79.7	60,583,547	91.5
July	8,086,519	81.4	194,638	50.9	627,575	61.4	8,908,732	78.6
August	8,297,172	83.6	204,723	53.5	731,995	71.6	9,233,890	81.5
September	8,135,139	84.7	185,967	50.2	656,800	66.4	8,977,906	81.8
3rd Qtr.	24,518,830	83.2	585,328	51.5	2,016,370	66.4	27,120,528	80.6
9 Mo.	78,851,294	90.2	2,077,515	61.7	6,775,266	75.2	87,704,075	87.9
October	8,348,522	84.1	154,577	40.4	694,618	67.9	9,197,717	81.1
November	7,674,698	79.9	134,709	36.4	583,512	59.0	8,392,919	76.5
December	6,783,262	68.3	108,237	28.3	528,686	51.7	7,420,285	65.5
4th Qtr.	22,806,482	77.4	397,623	35.0	1,806,816	59.5	25,010,921	74.4
2nd 6 Mo.	47,325,312	80.3	982,951	43.3	3,823,186	63.0	52,131,449	77.5
Total	101,657,776	87.0	2,475,138	54.9	8,582,082	71.3	112,714,996	84.5

Note—The percentages of capacity operated are based on annual capacities as of Jan. 1, 1958, as follows: Open hearth 122,321,830 net tons; bessemer 4,027,000 net tons; oxygen process, electric and crucible 14,398,740 net tons. Total for 1958, 140,742,570 net tons. For 1957, the capacity tonnages are: Open hearth 116,912,410 net tons; bessemer 4,505,000 net tons; oxygen process, electric and crucible 12,041,740 net tons. Total for 1957, 133,459,150 net tons.
*Revised. †Preliminary.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

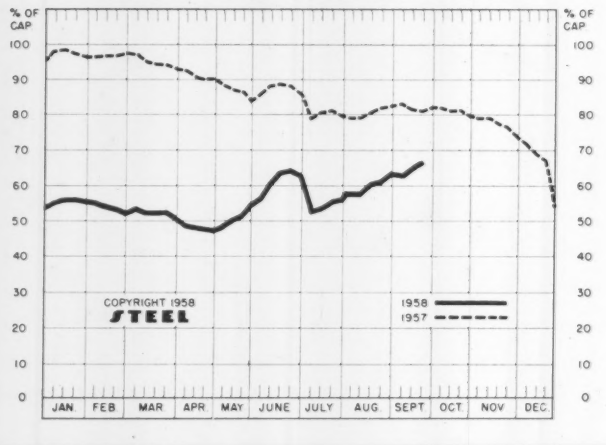
	Week Ended Sept. 21	Change	Same Week 1957	Same Week 1956
Pittsburgh	62	+ 0.5*	81	98.5
Chicago	76	0*	83.5	102
Eastern	64	0	87	98
Youngstown	59	+ 1	79	102
Wheeling	69.5	+ 1.5	93.5	97.5
Cleveland	60.5	+ 6	87.5	105
Buffalo	53.5	— 2.5	100	107.5
Birmingham	54	+ 0.5	76.5	95.5
Cincinnati	75.5	— 1*	82	89
St. Louis	78	— 4.5	83	88
Detroit	78	+ 0.5*	95	99
Western	74	+ 1	95	99
National Rate	66.5	+ 1.5	81	100

INGOT PRODUCTION‡

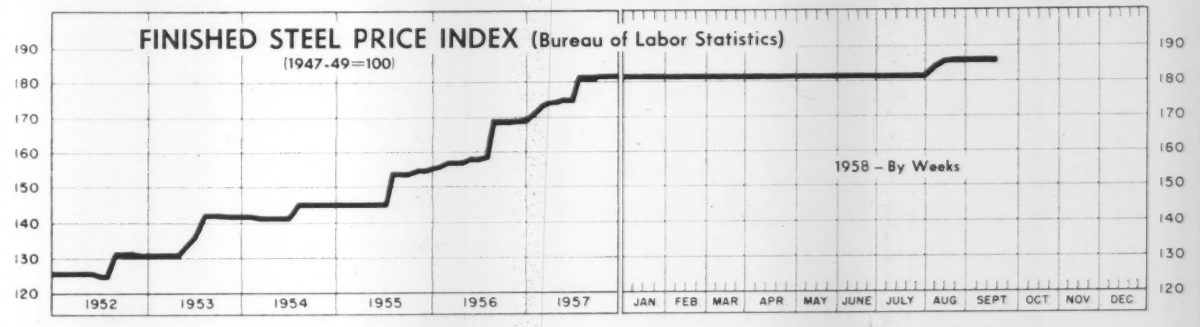
	Week Ended Sept. 21	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	111.9†	110.8	105.2	130.8
NET TONS (In thousands)	1,797†	1,780	1,690	2,101

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Sept. 16, 1958	Week Ago	Month Ago	Aug. Avg	Year Ago
186.6	186.6	186.4	186.4	181.5

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 16

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.335
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.783	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.545
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.885	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	205.710
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
		Tubes, Boiler (100 ft)	51.200
		Tubing, Mechanical, Carbon (100 ft)	26.157
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483
		Black Plate, Canmaking Quality (95 lb base box)	7.583
		Wire, Drawn, Carbon	10.575
		Wire, Drawn, Stainless, 430 (lb)	0.653
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 17 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	246.65	239.15	189.38
Index in cents per lb	6.682	6.682	6.682	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$149.28	$146.19	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	43.00	42.67	41.33	48.17	37.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Sept. 17 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R. Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods 7/32-5/8" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	Sept. 17 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh	$43.50	$42.50	$42.50	$49.50	$40.50
No. 1 Heavy Melt, E. Pa.	40.00	40.00	38.00	45.50	36.50
No. 1 Heavy Melt, Chicago	45.50	45.50	43.50	49.50	35.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	51.50	36.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	48.50	33.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	34.50	47.50	39.50
Rails, Rerolling, Chicago	65.50	65.50	64.50	64.50	52.00
No. 1 Cast, Chicago	46.50	46.50	45.50	44.50	35.00

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25

For Rolls... Specify

Versatile ACIPCO CENTRIFUGALLY SPUN STEEL TUBES

Among the equipment Blaw-Knox Company manufactures for many industries are steel mill roll-out tables. ACIPCO tubes, furnished as cast, 12.43" OD x 9.50" ID, machine cut to 4-ft. lengths, are used as rolls in this Blaw-Knox table.

Because they are centrifugally spun, ACIPCO tubes are dimensionally stable and possess an inherent high degree of dynamic balance. Their dense, homogeneous, inclusion-free grain structure results in good machinability. In addition, ACIPCO tubes are highly resistant to impact, an important requirement for steel mill table rolls.

These advantages, plus the flexibility of ACIPCO's complete "one source—from start to finish" facilities, are reasons why Blaw-Knox specified ACIPCO centrifugally spun tubes for this application.

"Custom-spun" in stainless steel, all carbon steels or special analyses as well as in all alloy irons including Ductile, ACIPCO tubes are furnished to your exact physical, chemical and metallurgical specifications.

If rolls are a part of your products, or if you use tubular metal components in any way, get full information about ACIPCO. Call or write today.

BLAW-KNOX

One of the world's leading producers of complete mills and auxiliary equipment for rolling ferrous and nonferrous metals, Blaw-Knox Company also is a major supplier to the chemical, petroleum, food processing, construction and communications industries. The company has its headquarters in Pittsburgh, and manufacturing plants in Pittsburgh and Erie, Pa., Buffalo, Chicago, Mora, Minn., and Wheeling, W. Va.

VERSATILE ACIPCO TUBES

Size Range: Lengths up to 410" have been produced to meet modern machinery requirements. OD's from 2.25" to 50"; wall thicknesses from .25" to 4".

Analyses: All alloy grades in steel and cast iron, including heat and corrosion resistant stainless steel, plain carbon steel and special analyses.

Furnished: As cast, rough machined, or finished machined, including honing. Complete welding and machine shop facilities for fabrication.

SPECIAL PRODUCTS DIVISION

AMERICAN CAST IRON PIPE CO.

ACIPCO

BIRMINGHAM 2, ALABAMA

Steel Prices

Mill prices as reported to STEEL, Sept. 17, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 124; footnotes, page 126.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ..... $76.00

INGOTS, Alloy (NT)
Detroit S41 ..... $82.00
Economy,Pa. B14 ..... 82.00
Farrell,Pa. S3 ..... 82.00
Lowellville,O. S3 ..... 82.00
Midland,Pa. C18 ..... 82.00
Munhall,Pa. U5 ..... 82.00
Sharon,Pa. S3 ..... 82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ..... $82.00
Bessemer,Pa. U5 ..... 80.00
Buffalo R2 ..... 80.00
Clairton,Pa. U5 ..... 80.00
Ensley,Ala. T2 ..... 80.00
Fairfield,Ala. T2 ..... 80.00
Fontana,Calif. K1 ..... 90.50
Gary,Ind. U5 ..... 80.00
Johnstown,Pa. B3 ..... 80.00
Lackawanna,N.Y. B2 ..... 80.00
Munhall,Pa. U5 ..... 80.00
Owensboro,Ky. G8 ..... 77.50
S.Chicago,Ill. R2, U5 ..... 80.00
S.Duquesne,Pa. U5 ..... 80.00
Sterling,Ill. N15 ..... 80.00
Youngstown R2 ..... 80.00

Carbon, Forging (NT)
Bessemer,Pa. N5 ..... $99.50
Buffalo R2 ..... 99.50
Canton,O. R2 ..... 102.00
Clairton,Pa. U5 ..... 99.50
Conshohocken,Pa. A3 .. 104.50
Ensley,Ala. T2 ..... 99.50
Fairfield,Ala. T2 ..... 99.50
Farrell,Pa. S3 ..... 99.50
Fontana,Calif. K1 ..... 109.00
Gary,Ind. U5 ..... 99.50
Geneva,Utah C11 ..... 99.50
Houston S5 ..... 104.50
Johnstown,Pa. B2 ..... 99.50
Lackawanna,N.Y. B2 ..... 99.50
LosAngeles B3 ..... 109.00
Midland,Pa. C18 ..... 99.50
Munhall,Pa. U5 ..... 99.50
Owensboro,Ky. G8 ..... 96.00
Seattle B3 ..... 113.00
Sharon,Pa. S3 ..... 99.50
S.Chicago R2, U5, W14 .. 99.50
S.Duquesne,Pa. U5 ..... 99.50
S.SanFrancisco B3 ..... 109.00
Warren,O. C17 ..... 99.50

Alloy, Forging (NT)
Bethlehem,Pa. R2 ..... $119.00
Bridgeport,Conn. C32 .. 119.00
Buffalo R2 ..... 119.00
Canton,O. R2, T7 ..... 119.00
Conshohocken,Pa. A3 .. 126.00
Detroit S41 ..... 119.00
Economy,Pa. B14 ..... 119.00
Farrell,Pa. S3 ..... 119.00
Fontana,Calif. K1 ..... 140.00
Gary,Ind. U5 ..... 119.00
Houston S5 ..... 124.00
Ind.Harbor,Ind. Y1 ..... 119.00
Johnstown,Pa. B2 ..... 119.00
Lackawanna,N.Y. B2 .. 119.00
LosAngeles B3 ..... 139.00
Lowellville,O. S3 ..... 119.00
Massillon,O. R2 ..... 119.00
Midland,Pa. C18 ..... 119.00
Munhall,Pa. U5 ..... 119.00
Owensboro,Ky. G8 ..... 114.00
Sharon,Pa. S3 ..... 119.00
S.Chicago R2,U5,W14 .. 119.00
S.Duquesne,Pa. U5 ..... 119.00
Struthers,O. Y1 ..... 119.00
Warren,O. C17 ..... 119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ..... $122.50
Canton,O. R2 ..... 125.00
Cleveland R2 ..... 122.50
Gary,Ind. U5 ..... 122.50
S.Chicago,Ill. R2, W14 .. 122.50
S.Duquesne,Pa. U5 ..... 122.50
Warren,O. C17 ..... 122.50

SKELP
Aliquippa,Pa. J5 ..... 5.05
Munhall,Pa. U5 ..... 5.05
Pittsburgh J5 ..... 5.05
Warren,O. R2 ..... 5.05
Youngstown R2, U5 ..... 5.05

WIRE RODS
AlabamaCity,Ala. R2 ..... 6.40
Aliquippa,Pa. J5 ..... 6.40
Alton,Ill. L1 ..... 6.60
Bartonville,Ill. K4 ..... 6.50
Buffalo W12 ..... 6.40
Cleveland A7 ..... 6.40
Donora,Pa. A7 ..... 6.40
Fairfield,Ala. T2 ..... 6.40
Houston S5 ..... 6.65
Indiana Harbor,Ind. Y1 .. 6.40
Johnstown,Pa. B2 ..... 6.40
Joliet,Ill. A7 ..... 6.40
KansasCity,Mo. S5 ..... 6.65
Kokomo,Ind. C16 ..... 6.50
LosAngeles B3 ..... 7.20
Minnequa,Colo. C10 ..... 6.65
Monessen,Pa. P7 ..... 6.40
N.Tonawanda,N.Y. B11 .. 6.40
Pittsburg,Calif. C11 ..... 7.20
Portsmouth,O. P12 ..... 6.40
Roebling,N.J. R5 ..... 6.50
S.Chicago,Ill. R2, W14 .. 6.40
SparrowsPoint,Md. B2 .. 6.50
Sterling,Ill.(1) N15 ..... 6.40
Sterling,Ill. N15 ..... 6.50
Struthers,O. Y1 ..... 6.40
Worcester,Mass. A7 ..... 6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..... 5.50
Atlanta A11 ..... 5.70
Aliquippa,Pa. J5 ..... 5.50
Bessemer,Ala. T2 ..... 5.50
Bethlehem,Pa. B2 ..... 5.55
Birmingham C15 ..... 5.50
Clairton,Pa. U5 ..... 5.50
Fairfield,Ala. T2 ..... 5.50
Fontana,Calif. K1 ..... 6.30
Gary,Ind. U5 ..... 5.50
Geneva,Utah C11 ..... 5.50
Houston S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1 .. 5.50
Johnstown,Pa. B2 ..... 5.55
Joliet,Ill. P22 ..... 5.50
KansasCity,Mo. S5 ..... 5.60
Lackawanna,N.Y. B2 ..... 5.55
LosAngeles B3 ..... 6.20
Minnequa,Colo. C10 ..... 5.80
Munhall,Pa. U5 ..... 5.50
Niles,Calif. P1 ..... 6.25
Phoenixville,Pa. P4 ..... 5.55
Portland,Oreg. O4 ..... 6.25
Seattle B3 ..... 6.25
S.Chicago,Ill. U5, W14 .. 5.50
S.SanFrancisco B3 ..... 6.15
Sterling,Ill. N15 ..... 5.50
Torrance,Calif. C11 ..... 6.20
Weirton,W.Va. W6 ..... 5.50

Wide Flange
Bethlehem,Pa. B2 ..... 5.55
Clairton,Pa. U5 ..... 5.50
Fontana,Calif. K1 ..... 6.45
IndianaHarbor,Ind. I-2 .. 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
Phoenixville,Pa. P4 ..... 5.55
S.Chicago,Ill. U5 ..... 5.50
Weirton,W.Va. W6 ..... 5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 6.90
Munhall,Pa. U5 ..... 6.80
S.Chicago,Ill. U5, W14 .. 6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 ..... 8.05
Bessemer,Ala. T2 ..... 8.05
Bethlehem,Pa. B2 ..... 8.10
Clairton,Pa. U5 ..... 8.05
Fairfield,Ala. T2 ..... 8.05
Fontana,Calif. K1 ..... 8.85
Gary,Ind. U5 ..... 8.05
Geneva,Utah C11 ..... 8.05
Houston S5 ..... 8.15
Ind.Harbor,Ind. I-2, Y1 .. 8.05
Johnstown,Pa. B2 ..... 8.10
KansasCity,Mo. S5 ..... 8.15
Lackawanna,N.Y. B2 ..... 8.10
LosAngeles B3 ..... 8.75
Munhall,Pa. U5 ..... 8.05
Seattle B3 ..... 8.80
S.Chicago,Ill. U5, W14 .. 8.05
S.SanFrancisco B3 ..... 8.70
Struthers,O. Y1 ..... 8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 8.10
Ind.Harbor,Ind. I-2 ..... 8.05
Lackawanna,N.Y. B2 ..... 8.10
Munhall,Pa. U5 ..... 8.05
S.Chicago,Ill. U5 ..... 8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 ..... 5.55
Ind.Harbor,Ind. I-2 ..... 5.50
Lackawanna,N.Y. B2 ..... 5.55
Munhall,Pa. U5 ..... 5.50
S.Chicago,Ill. I-2, U5 .. 5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ..... 6.50
Lackawanna,N.Y. B2 ..... 6.50
Munhall,Pa. U5 ..... 6.50
S.Chicago,Ill. I-2, U5 .. 6.50
Weirton,W.Va. W6 ..... 6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..... 5.30
Aliquippa,Pa. J5 ..... 5.30
Ashland,Ky.(15) A10 ..... 5.30
Atlanta A11 ..... 5.50
Bessemer,Ala. T2 ..... 5.30
Clairton,Pa. U5 ..... 5.30
Claymont,Del. C22 ..... 5.30
Cleveland J5, R2 ..... 5.30
Coatesville,Pa. L7 ..... 5.30
Conshohocken,Pa. A3 .. 5.30
Ecorse,Mich. G5 ..... 5.30
Fairfield,Ala. T2 ..... 5.30
Farrell,Pa. S3 ..... 5.30
Fontana,Calif.(30) K1 .. 6.10
Gary,Ind. U5 ..... 5.30
Geneva,Utah C11 ..... 5.30
GraniteCity,Ill. G4 ..... 5.30
Harrisburg,Pa. P4 ..... 5.30
Houston S5 ..... 5.40
Ind.Harbor,Ind. I-2, Y1 .. 5.30
Johnstown,Pa. B2 ..... 5.30
Lackawanna,N.Y. B2 ..... 5.30
Mansfield,O. E6 ..... 5.30
Minnequa,Colo. C10 ..... 6.15
Munhall,Pa. U5 ..... 5.30
Newport,Ky. A2 ..... 5.30
Pittsburgh J5 ..... 5.30
Riverdale,Ill. A1 ..... 5.30
Seattle B3 ..... 6.20
Sharon,Pa. S3 ..... 5.30
S.Chicago,Ill. U5, W14 .. 5.30
SparrowsPoint,Md. B2 .. 5.30
Sterling,Ill. N15 ..... 5.30
Steubenville,O. W10 ..... 5.30
Warren,O. R2 ..... 5.30
Youngstown U5, Y1 ..... 5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ..... 6.75
Fontana,Calif. K1 ..... 7.85
Geneva,Utah C11 ..... 7.05
Houston S5 ..... 7.15
Johnstown,Pa. B2 ..... 7.05
SparrowsPoint,Md. B2 .. 7.05

PLATES, Wrought Iron
Economy,Pa. B14 ..... 13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ..... 7.95
Ashland,Ky. A10 ..... 7.95
Bessemer,Ala. T2 ..... 7.95
Clairton,Pa. U5 ..... 7.95
Claymont,Del. C22 ..... 7.95
Cleveland J5, R2 ..... 7.95
Coatesville,Pa. L7 ..... 7.625
Conshohocken,Pa. A3 .. 7.95
Economy,Pa. B14 ..... 7.625
Ecorse,Mich. G5 ..... 7.95
Fairfield,Ala. T2 ..... 7.95
Farrell,Pa. S3 ..... 7.95
Fontana,Calif.(30) K1 .. 8.75
Gary,Ind. U5 ..... 7.95
Geneva,Utah C11 ..... 7.95
Houston S5 ..... 8.05
Ind.Harbor,Ind. I-2, Y1 .. 7.95
Johnstown,Pa. B2 ..... 7.95
Munhall,Pa. U5 ..... 7.95
Pittsburgh J5 ..... 7.95
Seattle B3 ..... 8.85
Sharon,Pa. S3 ..... 7.95
S.Chicago,Ill. U5, W14 .. 7.95
SparrowsPoint,Md. B2 .. 7.95
Warren,O. R2 ..... 7.95
Youngstown U5, Y1 ..... 7.95

PLATES, ALLOY
Aliquippa,Pa. J5 ..... 7.50
Claymont,Del. C22 ..... 7.50
Coatesville,Pa. L17 ..... 7.50
Economy,Pa. B14 ..... 7.50
Farrell,Pa. S3 ..... 7.50
Fontana,Calif. K1 ..... 8.30
Gary,Ind. U5 ..... 7.50
Houston S5 ..... 7.60
Ind.Harbor,Ind. Y1 ..... 7.50
Johnstown,Pa. B2 ..... 7.50
Lowellville,O. S3 ..... 7.50
Munhall,Pa. U5 ..... 7.50
Newport,Ky. A2 ..... 7.50
Pittsburgh J5 ..... 7.50
Seattle B3 ..... 8.40
Sharon,Pa. S3 ..... 7.50
S.Chicago,Ill. U5, W14 .. 7.50
SparrowsPoint,Md. B2 .. 7.50
Youngstown Y1 ..... 7.50

FLOOR PLATES
Cleveland J5 ..... 6.375
Conshohocken,Pa. A3 .. 6.375
Ind.Harbor,Ind. I-2 .. 6.375
Munhall,Pa. U5 ..... 6.375
S.Chicago,Ill. U5 ..... 6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..... 5.55
Ashland l.c.l.(15) A10 ..... 6.05
Cleveland c.l. R2 ..... 6.05
Warren,O. c.l. R2 ..... 6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..... 5.675
Aliquippa,Pa.(9) J5 ..... 5.675
Alton,Ill. L1 ..... 5.875
Atlanta(9) A11 ..... 5.875
Bessemer,Ala.(9) T2 ..... 5.675
Birmingham(9) C15 ..... 5.675
Buffalo(9) R2 ..... 5.675
Canton,O.(23) R2 ..... 6.15
Clairton,Pa.(9) U5 ..... 5.675
Cleveland(9) R2 ..... 5.675
Ecorse,Mich.(9) G5 ..... 5.675
Emeryville,Calif. J7 ..... 6.425
Fairfield,Ala.(9) T2 ..... 5.675
Fairless,Pa.(9) U5 ..... 5.825
Fontana,Calif.(9) K1 ..... 6.375
Gary,Ind.(9) U5 ..... 5.675
Houston(9) S5 ..... 5.925
Ind.Harbor(9) I-2, Y1 .. 5.675
Johnstown,Pa.(9) B2 ..... 5.675
Joliet,Ill. P22 ..... 5.675
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 ..... 5.675
LosAngeles(9) B3 ..... 6.375
Massillon,O.(23) R2 ..... 6.15
Midland,Pa.(23) C18 ..... 6.025
Milton,Pa. M18 ..... 5.825
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.375
N.Tonawanda,N.Y.(23) B11 6.025
Owensboro,Ky.(9) G8 ..... 5.425
Pittsburg,Calif.(9) C11 .. 6.375
Pittsburgh(9) J5 ..... 5.675
Portland,Oreg. O4 ..... 6.425
Riverdale,Ill.(9) A1 ..... 5.675
Seattle B3, N14 ..... 6.425
S.Ch'c'go(9)R2,U5,W14 .. 5.675
S.Duquesne,Pa.(9) U5 .. 5.675
S.SanFran.,Calif.(9)B3 .. 6.425
Sterling,Ill.(1)(9) N15 .. 5.675
Sterling,Ill.(9) N15 ..... 5.775
Struthers,O.(9) Y1 ..... 5.675
Tonawanda,N.Y. B12 ..... 5.675
Torrance,Calif.(9) C11 .. 6.375
Warren,O. C17 ..... 6.025
Youngstown(9) R2, U5 .. 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.725
Bethlehem,Pa. B2 ..... 6.725
Bridgeport,Conn. C32 .. 6.80
Buffalo R2 ..... 6.725
Canton,O. R2, T7 ..... 6.725
Clairton,Pa. U5 ..... 6.725
Detroit S41 ..... 6.725
Economy,Pa. B14 ..... 6.725
Ecorse,Mich. G5 ..... 6.725
Fairless,Pa. U5 ..... 6.875
Farrell,Pa. S3 ..... 6.725
Fontana,Calif. K1 ..... 7.775
Gary,Ind. U5 ..... 6.725
Houston S5 ..... 6.975
Ind.Harbor,Ind. I-2, Y1 .. 6.725
Johnstown,Pa. B2 ..... 6.725
KansasCity,Mo. S5 ..... 6.975
Lackawanna,N.Y. B2 ..... 6.725
Lowellville,O. S3 ..... 6.725
LosAngeles B3 ..... 7.775
Massillon,O. R2 ..... 6.725
Midland,Pa. C18 ..... 6.725
Owensboro,Ky. G8 ..... 6.475
Pittsburgh J5 ..... 6.725
Sharon,Pa. S3 ..... 6.725
S.Chicago R2, U5, W14 .. 6.725
S.Duquesne,Pa. U5 ..... 6.725
Struthers,O. Y1 ..... 6.725
Warren,O. C17 ..... 6.725
Youngstown U5 ..... 6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 ..... 8.30
Bessemer,Ala. T2 ..... 8.30
Bethlehem,Pa. B2 ..... 8.30
Clairton,Pa. U5 ..... 8.30
Cleveland R2 ..... 8.30
Ecorse,Mich. G5 ..... 8.30
Fairfield,Ala. T2 ..... 8.30
Fontana,Calif. K1 ..... 9.00
Gary,Ind. U5 ..... 8.30
Houston S5 ..... 8.55
Ind.Harbor,Ind. Y1 ..... 8.30
Johnstown,Pa. B2 ..... 8.30
KansasCity,Mo. S5 ..... 8.55
Lackawanna,N.Y. B2 ..... 8.30
Los Angeles B3 ..... 9.00
Pittsburgh J5 ..... 8.30
Seattle B3 ..... 9.05
S.Chicago,Ill. W14 ..... 8.30
S.Duquesne,Pa. U5 ..... 8.30
S.SanFrancisco B3 ..... 9.05
Struthers,O. Y1 ..... 8.30
Youngstown U5 ..... 8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..... 5.825
Houston(9) S5 ..... 5.925
KansasCity,Mo.(9) S5 .. 5.925
Lackawanna(9) B2 ..... 5.675
Sterling,Ill. N15 ..... 5.775
Sterling,Ill.(1) N15 ..... 5.675
Tonawanda,N.Y. B12 ..... 5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 ..... 5.675
Atlanta A11 ..... 5.875
Joliet,Ill. P22 ..... 5.675
Minnequa,Colo. C10 ..... 6.125
Niles,Calif. P1 ..... 6.375
Pittsburgh J5 ..... 5.675
Portland,Oreg. O4 ..... 6.425
SanFrancisco S7 ..... 6.52
Seattle B3 ..... 6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ..... 6.80
Clairton,Pa. U5 ..... 6.80
Gary,Ind. U5 ..... 6.80
Houston S5 ..... 7.05
KansasCity,Mo. S5 ..... 7.05
Pittsburgh J5 ..... 6.80
Youngstown U5 ..... 6.80

BARS, C. F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11 75*
Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12 ..10.175
Camden,N.J. P13 ..... 10.35
Chicago W18 ..... 10.175
Elyria,O. W8 ..... 10.175
Monaca,Pa. S17 ..... 10.175
Newark,N.J. W18 ..... 10.35
SpringCity,Pa. K3 ..... 10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ..... 7.65
BeaverFalls,Pa. M12,R2 .. 7.65
Birmingham C15 ..... 8.25
Buffalo B5 ..... 7.70
Camden,N.J. P13 ..... 8.10
Carnegie,Pa. C12 ..... 7.65
Chicago W18 ..... 7.65
Cleveland A7, C20 ..... 7.65
Detroit B5, P17 ..... 7.85
Detroit S41 ..... 7.65
Donora,Pa. A7 ..... 7.65
Elyria,O. W8 ..... 7.65
FranklinPark,Ill. N5 ..... 7.65
Gary,Ind. R2 ..... 7.65
GreenBay,Wis. F7 ..... 7.65
Hammond,Ind. J5, L2 .. 7.65
Hartford,Conn. R2 ..... 8.15
Harvey,Ill. B5 ..... 7.65
Lackawanna,N.Y. B2 ..... 7.65
LosAngeles P2, S30 ..... 8.10
Mansfield,Mass. B5 ..... 7.65
Massillon,O. R2, R8 ..... 7.65
Midland,Pa. C18 ..... 7.65
Monaca,Pa. S17 ..... 7.65
NewCastle,Pa.(17) B4 .. 7.65
Pittsburgh J5 ..... 7.65
Plymouth,Mich. P5 ..... 7.90
Putnam,Conn. W18 ..... 8.20
Readville,Mass. C14 ..... 8.20
S.Chicago,Ill. W14 ..... 7.65
SpringCity,Pa. K3 ..... 8.10
Struthers,O. Y1 ..... 7.65
Warren,O. C17 ..... 7.65
Willimantic,Conn. J5 ..... 8.15
Waukegan,Ill. A7 ..... 7.65
Youngstown F3, Y1 ..... 7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 .. 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ..... 9.025
BeaverFalls,Pa. M12,R2 .. 9.025
Bethlehem,Pa. B2 ..... 9.025
Bridgeport,Conn. C32 .. 9.175
Buffalo B5 ..... 9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 ..... 8.775
Carnegie,Pa. C12 ..... 9.025
Chicago W18 ..... 9.025
Cleveland A7, C20 ..... 9.025
Detroit B5, P17 ..... 9.225
Detroit S41 ..... 9.025
Donora,Pa. A7 ..... 9.025
Elyria,O. W8 ..... 9.025
FranklinPark,Ill. N5 ..... 9.025
Gary,Ind. R2 ..... 9.025
GreenBay,Wis. F7 ..... 9.025
Hammond,Ind. J5, L2 .. 9.026
Hartford,Conn. R2 ..... 9.325
Harvey,Ill. B5 ..... 9.025
Lackawanna,N.Y. B2 ..... 9.025
LosAngeles P2, S30 ..... 11.00
Mansfield,Mass. B5 ..... 9.325
Massillon,O. R2, R8 ..... 9.025
Midland,Pa. C18 ..... 9.025
Monaca,Pa. S17 ..... 9.025
Newark,N.J. W18 ..... 9.20
Plymouth,Mich. P5 ..... 9.225
S.Chicago,Ill. W14 ..... 9.025
SpringCity,Pa. K3 ..... 9.20
Struthers,O. Y1 ..... 9.025
Warren,O. C17 ..... 9.025
Waukegan,Ill. A7 ..... 9.025
Willimantic,Conn. J5 ..... 9.325
Worcester,Mass. A7 ..... 9.325
Youngstown F3, Y1 ..... 9.025

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 ..5.675
Birmingham C15 ..5.675
Buffalo R2 ..5.675
Cleveland R2 ..5.675
Ecorse, Mich. G5 ..5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 ..5.675
Fairless,Pa. U5 ..5.825
Fontana,Calif. K1 ..6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 ..5.675
Houston S5 ..5.926
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ..5.675
Joliet,Ill. P22 ..5.675
KansasCity,Mo. S5 ..5.925
Kokomo,Ind. C16 ..5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 ..6.375
Madison,Ill. L1 ..5.625
Milton,Pa. M18 ..5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 ..6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 ..5.676
Portland,Oreg. O4 ..6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 ..6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ..5.675
S.SanFrancisco B3 ..6.425
SparrowsPoint,Md. B2 ..5.675
Sterling,Ill.(1) N15 ..5.675
Sterling,Ill. N15 ..5.775
Struthers,O. Y1 ..5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated; to Consumers)

Baltimore B2 ..7.42
Boston B2, U8 ..8.15
Chicago U8 ..7.41
Cleveland U8 ..7.39
Houston S5 ..7.60
Johnstown,Pa. B2 ..7.33
KansasCity,Mo. S5 ..7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 ..6.70
Newark, N.J. U8 ..7.80
Philadelphia U8 ..7.63
Pittsburgh J5, U8 ..7.35
SandSprings,Okla. S5 ..7.60
Seattle B3, N14 ..7.95
SparrowsPt.,Md. B2 ..7.33
St.Paul U8 ..8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4)(44) I-2 5.675
ChicagoHts.(4) C2 ..5.675
Franklin,Pa.(3) F5 ..5.575
Franklin,Pa.(4) F5 ..5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ..5.575
Tonawanda(3) B12 ..5.575
Tonawanda(4) B12 ..6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 ..5.10
Aliquippa,Pa. J5 ..5.10
Ashland,Ky.(8) A10 ..5.10
Cleveland J5, R2 ..5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 ..5.10
Ecorse,Mich. G5 ..5.10
Fairfield,Ala. T2 ..5.10
Fairless,Pa. U5 ..5.15
Farrell,Pa. S3 ..5.10
Fontana,Calif. K1 ..5.825
Gary,Ind. U5 ..5.10
Geneva,Utah C11 ..5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 ..5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 ..5.10
Munhall,Pa. U5 ..5.10
Newport,Ky. A2 ..5.10
Niles,O. M21, S3 ..5.10
Pittsburg,Calif. C11 ..5.80
Pittsburgh J5 ..5.10
Portsmouth,O. P12 ..5.10
Riverdale,Ill. A1 ..5.10
Sharon,Pa. S3 ..5.10
S.Chicago,Ill. U5, W14 5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ..5.10
Warren,O. R2 ..5.10
Weirton,W.Va. W6 ..5.10
Youngstown U5, Y1 ..5-10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 ..6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 ..8.40
Ind.Harbor,Ind. Y1 ..8.10
Irvin,Pa. U5 ..8.40
Munhall,Pa. U5 ..8.40
Newport,Ky. A2 ..8.40
Youngstown U5 ..8.40
Youngstown Y1 ..8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..7.525
Ashland,Ky A10 ..7.525
Cleveland J5, R2 ..7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 ..7.525
Fairfield,Ala. T2 ..7.525
Fairless,Pa. U5 ..7.575
Farrell,Pa. S3 ..7.525
Fontana,Calif. K1 ..8.25
Gary,Ind. U5 ..7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 ..7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 ..7.525
Pittsburgh J5 ..7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 ..7.525
SparrowsPoint(36) B2 ..7.525
Warren,O. R2 ..7.525
Weirton,W.Va. W6 ..7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.35
Cleveland R2 ..5.875
Warren,O. R2 ..5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..7.05
Middletown,O. A10 ..6.775
Warren,O. R2 ..7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 ..6.275
Aliquippa,Pa. J5 ..6.275
Cleveland J5, R2 ..6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 ..6.275
Ecorse,Mich. G5 ..6.275
Fairfield,Ala. T2 ..6.275
Fairless,Pa. U5 ..6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ..7.40
Gary,Ind. U5 ..6.275
GraniteCity,Ill. G4 ..6.375
Ind.Harbor,Ind. I-2, Y1.6.275
Irvin,Pa. U5 ..6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 ..6.275
Middletown,O. A10 ..6.275
Newport,Ky. A2 ..6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 ..6.275
Portsmouth,O. P12 ..6.275
SparrowsPoint,Md. B2 ..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 ..6.275
Weirton,W.Va. W6 ..6.275
Yorkville,O. W10 ..6.275
Youngstown Y1 ..6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..9.275
Cleveland J5 R2 ..9.275
Ecorse,Mich. G5 ..9.275
Fairless,Pa. U5 ..9.325
Fontana,Calif. K1 ..10.40
Gary,Ind. U5 ..9.275
Ind.Harbor,Ind. I-2,Y1.9.275
Irvin,Pa. U5 ..9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 ..9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 ..9.275
Weirton,W.Va. W6 ..9.275
Youngstown Y1 ..9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ..7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2.6.875‡
Ashland,Ky. A10 ..6.875†
Canton,O. R2 ..6.875‡
Dover,O. E6 ..6.875†
Fairfield,Ala. T2 ..6.875†
Gary,Ind. U5 ..6.875†
GraniteCity,Ill. G4 ..6.975•
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 ..6.875†
Kokomo,Ind. C16 ..6.975‡
MartinsFerry,O. W10 ..6.875•
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625•
Pittsburgh J5 ..6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 ..6.875†
Weirton,W.Va. W6 ..6.875•

•Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana, Calif. K1 ..7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 ..10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 ..10.125

SHEETS, Galvannealed Steel

Canton,O. R2 ..7.275
Irvin,Pa. U5 ..7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ..7.125
Middletown,O. A10 ..7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 ..7.65
Niles,O.(28) R2 ..7.65
Youngstown J5 ..7.50
Weirton,W.Va. W6 ..7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky.. A10 ..6.775
Cleveland R2 ..6.775
Fairfield,Ala. T2 ..6.775
Gary,Ind. U5 ..6.775
GraniteCity,Ill. G4 ..6.875
Ind.Harbor,Ind. I-2,Y1.6.775
Irvin,Pa. U5 ..6.775
Middletown,O. A10 ..6.775
Niles,O. M21, S3 ..6.775
Youngstown Y1 ..6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..8.70
Ind.Harbor,Ind. I-2 ..8.70
Mansfield,O. E6 ..8.70
Yorkville,O. W10 ..8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 ..7.225
Mansfield,O. E6 ..7.225
Middletown,O. A10 ..7.225
Niles,O. M21, S3 ..7.225
Warren,O. R2 ..7.225
Weirton,W.Va. W6 ..7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ..7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ...5.10
Allenport,Pa. P7 .....5.10
Alton,Ill. L1 .....5.30
Ashland,Ky.(8) A10 ....5.10
Atlanta A11 .....5.10
Bessemer,Ala. T2 .....5.10
Birmingham C15 .....5.10
Buffalo(27) R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Ind.Harbor,Ind. I-2, Y1.5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2.5.10
LosAngeles(25) B3 .....5.85
LosAngeles C1 .....8.60
Minnequa,Colo. C10 ....6.20
Riverdale,Ill. A1 .....5.10
SanFrancisco S7 .....6.60
Seattle(25) B3 .....6.10
Seattle N14 .....6.60
Sharon,Pa. S3 .....5.10
S.Chicago W14 .....5.10
S.SanFrancisco(25) B3..5.85
SparrowsPoint,Md. B2 ..5.10
Torrance,Calif. C11 ....5.85
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown U5 .....5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 .....8.10
Farrell,Pa. S3 .....8.40
Gary,Ind. U5 .....8.40
Houston S5 .....8.65
Ind.Harbor,Ind. Y1 ....8.10
KansasCity,Mo. S5 ....8.65
LosAngeles B3 .....9.30
Lowellville,O. S3 .....8.40
Newport,Ky. A2 .....8.40
Sharon,Pa. A2, S3 .....8.40
S.Chicago,Ill. W14 .....8.40
Youngstown U5 .....8.40
Youngstown Y1 .....8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10 ..... 7.575
Bessemer,Ala. T2 ....7.575
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.575
Fairfield,Ala. T2 .....7.575
Farrell,Pa. S3 .....7.575
Gary,Ind. U5 .....7.575
Ind.Harbor,Ind. I-2,Y1.7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ....8.325
Seattle(25) B3 .....8.575
Sharon,Pa. S3 .....7.575
S.Chicago,Ill. W14 ....7.575
S.SanFrancisco(25) B3.8.325
SparrowsPoint,Md. B2.7.575
Warren,O. R2 .....7.575
Weirton,W.Va. W6 ....7.575
Youngstown U5, Y1 ...7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...5.35
Warren,O. R2 .....5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....7.425
Baltimore T6 .....7.975
Boston T6 .....7.975
Buffalo S40 .....7.425
Cleveland A7, J5 .....7.425
Dearborn,Mich. D3 ....7.425
Detroit D2, M1, P20...7.425
Dover,O. G6 .....7.425
Ecorse,Mich. G5 .....7.15
Evanston,Ill. M22 ....7.525
Farrell,Pa. S3 .....7.425
Follansbee,W.Va. F4 ..7.425
Fontana,Calif. K1 .....9.20
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ....7.425
Indianapolis S41 .....7.575
LosAngeles J5 .....9.325
LosAngeles C1 .....9.30
NewBedford,Mass. R10.7.875
NewBritain,Conn. S15..7.875
NewCastle,Pa. B4, E5..7.425
NewHaven,Conn. D2 ..7.875
NewKensington,Pa. A6.7.425
Pawtucket,R.I. R3 ....7.975
Pawtucket,R.I. N8 ....7.975
Philadelphia P24 .....7.875
Pittsburgh J5 .....7.425
Riverdale,Ill. A1 .....7.525
Rome,N.Y.(32) R6 .....7.425
Sharon,Pa. S3 .....7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford,Conn. W2..7.875
Warren,O. R2, T5 ....7.425
Weirton,W.Va. W6 ....7.425
Worcester,Mass. A7 ...7.975
Youngstown S41, Y1 ..7.425

STRIP, Cold-Rolled Alloy

Boston T6 .....15.90
Carnegie,Pa. S18 .....15.05
Cleveland A7 .....15.05
Dover,O. G6 .....15.55
Farrell,Pa. S3 .....15.55
FranklinPark,Ill. T6 ..15.55
Harrison,N.J. C18 .....15.05
Indianapolis S41 .....15.70
Lowellville,O. S3 .....15.55
Pawtucket,R.I. N8 ....15.90
Riverdale,Ill. A1 .....15.55
Sharon,Pa. S3 .....15.55
Worcester,Mass. A7 ...15.35
Youngstown S41 .....15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 .....10.45
Dearborn,Mich. D3 ....10.80
Dover,O. G6 .....10.80
Ecorse,Mich. G5 .....10.50
Farrell,Pa. S3 .....10.80
Ind.Harbor,Ind. Y1 ....10.80
Sharon,Pa. S3 .....10.80
Warren,O. R2 .....10.80

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.06	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Harrison,N.J. C18	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.06	10.46	12.60	15.60	18.55
Harrison,N.J. C18	...	...	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	...	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	...	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.25	....	....
Fostoria,O. S1	19.06	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown J5	18.45	22.30	26.65

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif.K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va.W6	10.06	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$7.85
Fairfield,Ala. T2 .....7.95
Fairless,Pa. U5 .....7.95
Fontana,Calif. K1 .....8.60
Gary,Ind. U5 .....7.85
GraniteCity,Ill. G4 .....7.95
Ind.Harbor,Ind. I-2, Y1..7.85
Irvin,Pa. U5 .....7.85
Weirton,W.Va. W6 ....10.80
Youngstown Y1 .....10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.175

STRIP, C.R. Electrogalvanized

Cleveland A7 .....7.15*
Dover,O. G6 .....7.425*
Evanston,Ill. M22 ...7.525*
Riverdale,Ill. A1 .....7.525*
Warren,O. B9, S3, T5.7.425*
Worcester,Mass. A7 ...7.70*
Youngstown J5 .....7.15*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 .....7.50
Sharon,Pa. S3 .....7.50

TIGHT COOPERAGE HOOP

Atlanta A11 .....5.65
Farrell,Pa. S3 .....5.525
Riverdale,Ill. A1 .....5.675
Sharon,Pa. S3 .....5.525
Youngstown U5 .....5.525

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5 .....7.50
Gary,Ind. U5 .....7.50
GraniteCity,Ill. G4 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Irvin,Pa. U5 .....7.50
Yorkville,O. W10 .....7.50

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5 .....$9.70
Irvin,Pa. U5 .....9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5 .....$11.25

SILICON STEEL

COILS & CUT LENGTHS (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

					Stator
Vandergrift,Pa. U5	....	....	....	....	8.10
Mansfield,O. E6	....	....	....	....	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 .....8.00
Alton,Ill. L1 .....8.20
Atlanta A1 .....8.00
Bartonville,Ill. K4 .....8.10
Buffalo W12 .....8.00
Chicago W13 .....8.00
Cleveland A7, C20 .....8.00
Crawfordsville,Ind. M8..8.10
Donora,Pa. A7 .....8.00
Duluth A7 .....8.00
Fairfield,Ala. T2 .....8.00
Fostoria,O.(24) S1 .....8.10
Houston S5 .....8.25
Jacksonville,Fla. M8 ...8.35
Johnstown,Pa. B2 .....8.00
Joliet,Ill. A7 .....8.00
KansasCity,Mo. S5 .....8.25
Kokomo,Ind. C16 .....8.10
LosAngeles B3 .....8.95
Minnequa,Colo. C10 ....8.25
Monessen,Pa. P7, P16 ..8.00
N.Tonawanda,N.Y. B11.8.00
Palmer,Mass. W12 .....8.30
Pittsburg,Calif. C11 ....8.95
Portsmouth,O. P12 .....8.00
Rankin,Pa. A7 .....8.00
S.Chicago,Ill. R2 .....8.00
S.SanFrancisco C10 ....8.95
SparrowsPoint,Md. B2..8.10
Sterling,Ill.(1) N15 ....8.00
Sterling,Ill. N15 .....8.10
Struthers,O. Y1 .....8.00
Waukegan,Ill. A7 .....8.00
Worcester,Mass. A7 ....8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 .....8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ....12.65
Buffalo W12 .....13.40
Cleveland A7 .....12.65
Donora,Pa. A7 .....12.65
Duluth A7 .....12.65
Johnstown,Pa. B2 .....12.65
Minnequa,Colo. C10 ..13.525
Monessen,Pa. P16 .....12.65
Monessen,Pa. P7 ..... 13.40
Muncie,Ind. I-7 .....13.60
NewHaven,Conn. A7 ....12.95
Palmer,Mass. W12 .....13.70
Pittsburg,Calif. C11 ....13.45
Portsmouth,O. P12 .....13.40
Roebling,N.J. R5 .....13.70
SparrowsPt.,Md. B2 ....12.75
Struthers,O. Y1 .....12.65
Trenton,N.J. A7 .....12.95
Waukegan,Ill. A7 .....12.65
Worcester,Mass. A7 ....12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5 ....10.00
LosAngeles B3 .....10.70
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
NewHaven,Conn. A7 ....10.05
Palmer,Mass. W12 .....10.05
Pittsburg,Calif. C11 ....10.25
Portsmouth,O. P12 ....9.75
Roebling,N.J. R5 .....9.60
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ....10.70
SparrowsPt.,Md. B2 ....9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Worcester,Mass. A7 ....10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 .....9.75
Alton,Ill. L1 .....9.95
Bartonville,Ill. K4 .....9.85
Buffalo W12 .....9.75
Cleveland A7 .....9.75
Donora,Pa. A7 .....9.75
Duluth A7 .....9.75
Fostoria,O. S1 .....9.80
Johnstown,Pa. B2 .....9.75
KansasCity,Mo. S5 ....10.00
LosAngeles B3 .....10.70
Milbury,Mass.(12) N6 ..10.05
Minnequa,Colo. C10 ....9.95
Monessen,Pa. P7, P16 ..9.75
Muncie,Ind. I-7 .....9.95
Palmer,Mass. W12 ....10.05
Pittsburg,Calif. C11 ....10.70
Portsmouth,O. P12 .....9.75
Roebling,N.J. R5 .....10.05
S.Chicago,Ill. R2 .....9.75
S.SanFrancisco C10 ....10.70
SparrowsPt.,Md. B2 ....9.85
Struthers,O. Y1 .....9.75
Trenton,N.J. A7 .....10.05
Waukegan,Ill. A7 .....9.75
Wor'ster,Mass.A7,J4,T6 10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 .....15.80
Bartonville,Ill. K4 ....15.70
Chicago W13 .....16.30
Cleveland A7 .....15.60
Crawfordsville,Ind. M8 ..16.40
Fostoria,O. S1 .....16.30
Houston S5 .....15.85
Jacksonville,Fla. M8 ....16.65
Johnstown,Pa. B2 .....15.60
KansasCity,Mo. S5 ....15.85
Kokomo,Ind. C16 .....16.30
Minnequa,Colo. C10 ....16.55
Monessen,Pa. P16 .....15.60
Muncie,Ind. I-7 .....16.50
Palmer,Mass. W12 .....16.60
S.SanFrancisco C10 ....17.15
Waukegan,Ill. A7 .....15.60
Worcester,Mass. T6 ....16.60
Worcester,Mass. A7 ....15.90

WIRE, Tire Bead

Bartonville,Ill. K4 ....16.55
Monessen,Pa. P16 .....16.55
Roebling,N.J. R5 .....17.65

ROPE WIRE	(A)
Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	*13.45*
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	11.65
Chicago W13	11.75
Cleveland A7	11.65
Crawfordsville,Ind. MS	11.65
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	11.65
Massillon,O. R8	11.65
Milwaukee G23	*12.85*
Monessen,Pa. P7, P16	11.65
Palmer,Mass. W12	11.95
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	11.75
Rome,N.Y. R6	11.65
Sharon,Pa. S3	11.65
Trenton,N.J. R5	12.65
Warren,O. B9	11.65
Worcester,Mass. A7	11.95
Worcester,Mass. T6	12.65

NAILS, Stock	**Col.**
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. MS	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. MS	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	179
(To Wholesalers; per cwt)	
Galveston,Tex. I17	$9.10

NAILS, Cut (100 lb keg)	
To Dealers (33)	
Conshohocken,Pa. A3	$10.30
Wheeling,W.Va. W10	9.80

POLISHED STAPLES	**Col.**
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	175
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. MS	177
Donora,Pa. A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville,Fla. MS	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	175
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	175
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill.(7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. MS	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. MS	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill.(37) N15	10.36

Coil No. 6500 Stand.	
AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. MS	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. MS	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim	
AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. MS	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. MS	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
Los Angeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop	**Col.**
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. MS	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. MS	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	172
ChicagoHts.,Ill. C2, I-2	172
Duluth A7	172
Franklin,Pa. F5	172
Huntington,W.Va. C15	172
Johnstown,Pa. B2	172
Marion,O. P11	172
Minnequa,Colo. C10	177
Sterling,Ill.(1) N15	172
Tonawanda,N.Y. B12	172

WIRE, Barbed	**Col.**
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	195*
Bartonville,Ill. K4	198
Crawfordsville,Ind. MS	198
Donora,Pa. A7	193
Duluth A7	193
Fairfield,Ala. T2	193
Houston S5	198**
Jacksonville,Fla. MS	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213
Rankin,Pa. A7	193
S.Chicago,Ill. R2	193*
S.SanFrancisco C10	213
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198

WOVEN FENCE, 9-15 Ga.	**Col.**
Ala.City,Ala. R2	187*
Aliq'ppa,Pa.9-14½ga.J5	190§
Atlanta A11	192*
Bartonville,Ill. K4	192
Crawfordsville,Ind. MS	192
Donora,Pa. A7	187
Duluth A7	187
Fairfield,Ala. T2	187
Houston S5	192**
Jacksonville,Fla. MS	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210
Rankin,Pa. A7	187
S.Chicago,Ill. R2	187*
Sterling,Ill.(7) N15	192

	An'ld	**Galv.**
WIRE (16 gage)	**Stone**	**Stone**
Ala.City,Ala.R2	17.15	18.70**
Aliq'ppa,Pa. J5	17.15	18.95
Bartonville K4	17.25	19.05
Cleveland A7	17.15	
Craw'dsville MS	*17.95*	*19.65*
Fostoria,O. S1	18.35	19.90†
Houston S5	17.40	18.95**
Jacksonville MS	*17.95*	*19.65*
Johnstown B2	17.15	18.95§
Kan.City,Mo. S5	17.40	
Kokomo C16	17.25	18.80
Minnequa C10	18.10	19.65**
P'lm'r,Mass. W12	18.15	19.70†
Pitts.,Calif. C11	17.50	19.05†
S.SanFran. C10	18.20	19.75**
SparrowsPt. B2	17.25	19.05§
Sterling(37) N15	17.25	19.05††
Waukegan A7	17.15	18.70†
Worcester A7	17.45	

WIRE, Merchant Quality (6 to 8 gage)	**An'ld Stone**	**Galv. Stone**
Ala.City,Ala. R2	9.00	9.55**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	8.75	9.425*
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	
Crawfordsville MS	*9.10*	*9.775*
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jacks'ville,Fla. MS	*9.10*	*9.775*
Johnstown B2(48)	8.65	9.325§
Joliet,Ill. A7	9.00	9.55†
Kans.City(48) S5	9.25	9.80**
Kokomo(48) C16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Minnequa C10	9.25	9.80**
Monessen P7(48)	8.65	9.325§
P'lmer,Mass. W12	9.30	9.85†
Pitts.,Calif. C11	9.95	10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.B2(48)	8.75	9.425§
Sterling(48) N15	9.25	9.925††
Sterling(1) (48)	9.15	9.825††
Struthers,O. Y1	9.00	9.65‡
Worcester,Mass. A7	9.30	9.85†

Based on zinc price of: †3.50 ‡5c, §10c. Less than 10c. *10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter ..	53.0
3¼ in. thru 6 in. ..	47.0
Longer than 6 in. ..	33.0
⅝ in., 3 in. & shorter	44.0
3¼ in. thru 6 in. ..	37.0
Longer than 6 in. ..	27.0
¾ in. thru 1 in.:	
6 in. and shorter ..	33.0
Longer than 6 in. ..	27.0
1⅛ in. and larger:	
All lengths	27.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter ..	53.0
3¼ in. thru 6 in. ..	47.0
⅝ in., 3 in. & shorter	27.0
3¼ in. thru 6 in. ..	17.0
Longer than 6 in. ..	10.0
¾ in. thru 1 in.:	
6 in. and shorter ..	18.0
Longer than 6 in. ..	7.0
1⅛ in. and larger:	
All lengths	7.0

Machine Bolts, Hot Galvanized
(Square & Hex, Full & Undersize Body)

½ in. and smaller:	
3 in. and shorter ..	38.0
3¼ in. thru 6 in. ..	29.0
Longer than 6 in. ..	15.0
⅝ in., 3 in. & shorter	27.0
3¼ in. thru 6 in. ..	17.0
Longer than 6 in. ..	10.0
¾ in. thru 1 in.:	
6 in. and shorter ..	18.0
Longer than 6 in. ..	7.0
1⅛ in. and larger:	
All lengths	7.0

Carriage, Plow & Lag Bolts, Hot Galvanized

½ in. and smaller:	
6 in. and shorter ..	28.0
Larger diameters and longer lengths	13.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter ..	46.0
Larger diameters and longer lengths	32.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts

½ in. and smaller:	
6 in. and shorter ..	46.0
Larger diameters and longer lengths	32.0

NUTS

(Container quantities and over)

Square Nuts, Reg. & Heavy:	
All sizes	56.0
Square Nuts, Reg. & Heavy, Hot Galvanized:	
All sizes	41.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:	
¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger..	51.5
Hex Nuts, Semifinished, Heavy (Incl. Slotted):	
¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	56.0
1⅝ in. and larger..	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
¾ in. and smaller..	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
¾ in. and smaller..	62.0
⅞ in. to 1½ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅝ in. and larger..	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:	
½ in. and shorter:	
¾ in. and smaller..	35.0
⅞, 1⅛, and 1 in. ..	16.0
Longer than 6 in.:	
¾ in. and smaller..	3.0
⅞, 1⅛, and 1 in. ..	+11.0
High Carbon, Heat Treated:	
6 in. and shorter:	
¾ in. and smaller..	20.0
⅞, 1⅛, and 1 in. ..	+ 5.0
Longer than 6 in.:	
¾ in. and smaller..	+19.0
⅞, 1⅛, and 1 in. ..	+39.0
Flat Head Capscrews:	
¾ in. and smaller, 6 in. and shorter ..	+85.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam.:	
6 in. and shorter..	+ 5.0
Longer than 6 in. ..	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in., larger 12.85
⅞ in. and smaller by 6 in. and shorter: 15.0%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2¾	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Tee Rails All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.525	5.425	....	7.00
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. N19				*6.725*

TIE PLATES	
Fairfield,Ala. T2	....6.875
Gary,Ind. U5	....6.875
Lackawanna,N.Y. B2	....6.60
Minnequa,Colo. C10	....6.60
Seattle B3	....6.75
Steelton,Pa. B2	....6.60
Torrance,Calif. C11	....6.875

JOINT BARS	
Bessemer,Pa. U5	....7.25
Fairfield,Ala. T2	....7.25
Joliet Ill. U5	....7.25
Lackawanna,N.Y. B2	..7.25
Minnequa,Colo. C10	..6.975
Steelton,Pa. B2	....7.25

AXLES	
Ind.Harbor,Ind. S13	..9.125
Johnstown,Pa. B2	....9.125

TRACK BOLTS, Untreated	
Cleveland R2	....14.75
KansasCity,Mo. S5	....15.35
Lebanon,Pa. B2	....15.35
Minnequa,Colo. C10	....14.75
Pittsburgh P14	....14.75
Seattle B3	....15.85

SCREW SPIKES	
Lebanon,Pa. B2	....15.10

STANDARD TRACK SPIKES	
Fairfield,Ala. T2	....9.75
Ind.Harbor,Ind. I-2, Y1	10.10
KansasCity,Mo. S5	....10.10
Lebanon,Pa. B2	....9.75
Minnequa,Colo. C10	....9.75
Pittsburgh J5	....10.10
Seattle B3	....10.60
S.Chicago,Ill. R2	....10.10
Struthers,O. Y1	....10.10
Youngstown R2	....10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ¾" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Dedd. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Dedd. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Banderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; dedd. in mill zone or within switching limits, 5.685c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

A hot steel circle ready for Claymont's 3000-ton head press. This precision machine is capable of hot or cold pressing heads up to 10 feet in diameter in a wide variety of metals. Integrated facilities make Claymont a reliable source of quality steel plate and plate products for industry.

by d'Arazien

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CF&I

CHECK CLAYMONT FOR — Alloy Steel Plates · Carbon Steel Plates · Stainless-Clad Steel Plates High Strength Low Alloy Steel Plates · CF&I Lectro-Clad Nickel Plated Steel Plates · Pressed and Spun Steel Heads · Manhole Fittings and Covers · Fabricated Steel Products Large Diameter Welded Steel Pipe

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Work with your AIM* . . . Federated Metals does . . .

Steel strapping cuts ingot loading time in half

FEDERATED METALS Division of American Smelting and Refining Company, Whiting, Ind., was looking for ways to speed handling and unloading of non-ferrous alloys. Their Acme Idea Man suggested a method using heavy-duty Acme Steel Strapping (Idea No. U6-22).

Now ingots are strapped to skids and these units are loaded into box cars and trucks with lift trucks. Formerly, the ingots were loaded loose on skids brought to the cars and stacked by hand. The new method cuts loading time by 50%, and customers report unloading costs are reduced by as much as 75%!

Unitizing ingots enables Federated Metals to double and triple storage capacity, too, because the units can be stacked for maximum utility of warehouse space.

Acme Idea Man Andy Bassi assists Federated Metals and many other companies with their packaging and materials handling problems.

***Work with your Acme Idea Man** to improve your materials handling from a time and money-saving standpoint, as well as for increased product protection. Write Dept. SDU-98, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL STEEL STRAPPING

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	-1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	-1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	-1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	-1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	-1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	-11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	-13	5.25	-9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	+11.5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	-9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	-0.75	+15.25	0.75	+15.5	0.75	-15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	45.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	48.25	51.50	53.00	55.50	53.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	118.75	....	132.00	138.50	135.50	149.25	149.25
18-8 Cb/Ta	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates: Carbon Base 5%	10%	15%	20%	Sheets: Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr-Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.515
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala., W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa., B10	68.00	68.50	69.00	69.50
Chester,Pa., P4	68.00	68.50	69.00	....
Swedeland,Pa., A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelhia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	....	....	8.64	9.01	10.68	....	9.05	8.97	10.90
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33 #	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	8.64	8.89	10.99
Boston	9.38	10.44	11.45	53.50	9.74	10.16	13.39 #	15.71	10.03	10.07	11.87
Buffalo	8.25	9.00	11.07	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.20	9.45	10.10	53.00	8.51	8.99	9.15	15.05	9.15	8.89	10.20
Cincinnati	8.34	9.48	10.45	52.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.18	9.45	10.20	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	7.50	8.80	....	....	7.65	7.60	11.01	....	7.65	8.10	9.35
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.43	9.70	10.45	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.25	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.55	9.80	....	....	8.84	9.32	11.96 #	....	9.33	9.22	10.86
Milwaukee	8.33	9.58	10.23	....	8.65	9.13	9.39	15.19	9.22	9.05	10.34
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	11.17	52.69	8.70	8.65	11.50	15.48	8.50	8.75	9.75**
Pittsburgh	8.18	9.45	10.45	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Portland, Oreg.	8.50	11.20	11.55	57.38	9.55	8.65	14.50	15.95	8.65	8.30	11.50
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	10.36	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.66	....	9.38	9.30	10.49
San Francisco	9.35	10.75	11.00	55.10	9.45‡‡	9.70	13.00	16.00	9.50	9.60	12.00
Seattle	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; [2]—30,000 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 Per Cent: St. Louis, Mexico, Vandalia, Mo. $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Pymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ½ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over. F.o.b. Riverton or Camden, N. J., west of Mississippi River	10.50 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron: Melting stock, 99.9% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.00
Annealed, 99.5% Fe	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade. 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

Aluminum: Atomized, 500-lb drum, freight allowed Carlots	39.50
Ton lots	41.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.50*
Zinc, 5000-lb lots	17.50-30.70‡
Tungsten: Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	Dollars 3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Diam (Inches)	Length (Inches)	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.30	$5.30	$5.30	$5.50
Bar Size Angles	5.05	5.05	5.05	5.42
Structural Angles	5.05	5.05	5.05	5.42
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	6.07	6.07	6.07	6.43
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.50	6.50	6.50	6.90
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails ($)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. $Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	*$8.50-9.00**
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	29.00-31.00
South African Transvaal	
48% no ratio	$29.00-31.00
44% no ratio	22.00-23.00
Turkish	
48% 3:1	$51.00-55.00
Domestic Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $5.15 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	36.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00

Per ton, bulk, ovens

Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton. Palmerton, Neville Island Fe 21-23% Mn, $105; 19-21% Mn, 1 3% S, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $215 Johnstown, Duquesne Sheridan, Neville Island, Pa.; Alloy, W Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%) Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-90%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn. carload packed 36.4c, ton lots 37.9c, less ton 39.1c Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices, Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.5c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.5c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.05c per lb of contained Cr. Packed, c.l. 31.65c, ton 33.45c, less ton 34.95c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carlotd packed, SM x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.03% max or Cr 33-36%, Si 45-48%, C 0.03% max. Carload, lump, bulk, 3" x down and 2" x down 27.50c per lb contained Cr, 14.20c per lb contained Si. 0.75" x down, 28.65c per lb contained Cr, 14.20c per lb contained Si. Delivered.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ¼" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 5% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump bulk, 14.20c per lb of contained Si. Packed c.l 16.70c, ton lot 18.15c, less ton 19.80c, f.o.b Alloy, W. Va.; Ashtabula, Marietta, O., Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump bulk, 15.25c per lb contained silicon. Packed, c.l. 17.25c, ton lot 19.05c, less ton 20.4c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.4c per lb of contained Si. Packed c.l. 18.30c; ton lot 19.95c, less ton 21.2c Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 19.5c per lb of contained Si. Packed, c.l. 21.15c, ton lot 22.55c, less ton 23.6c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump bulk, 21.00c per lb of Si. Packed, c.l. 22.65c, ton lot 23.95c, less ton 24.95c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy; ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3½ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags, 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets, 15.3c; bags 16.3c, 3000 lb to c.l., pallets, 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si). Contract, carload, bulk 7.7c per lb of briquet; packed, pallets, 7.9c; bags 8.9c; 3000 lb to c.l., pallets 9.5c; 2000 lb to c.l., bags 10.5c; less ton 11.4c. Delivered. Spot, add 0.25c. (Small size—weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 7.85c. Packed, pallets 8.05c; bags 9.05c; 3000 lb to c.l., pallets 9.65c; 2000 lb to c.l., bags, 10.65c; less ton 11.55c Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $1 per lb of contained Cb; less ton lots, $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx and Cb plus Ta 60% min, C 0.30% max). Ton lot 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lot $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

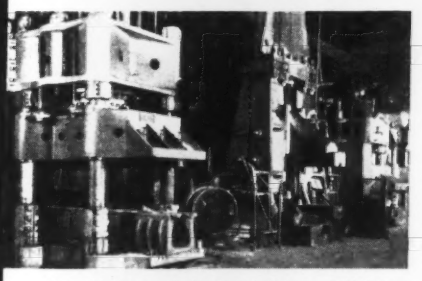
Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorous: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base); carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

Meet the proud crew that operates



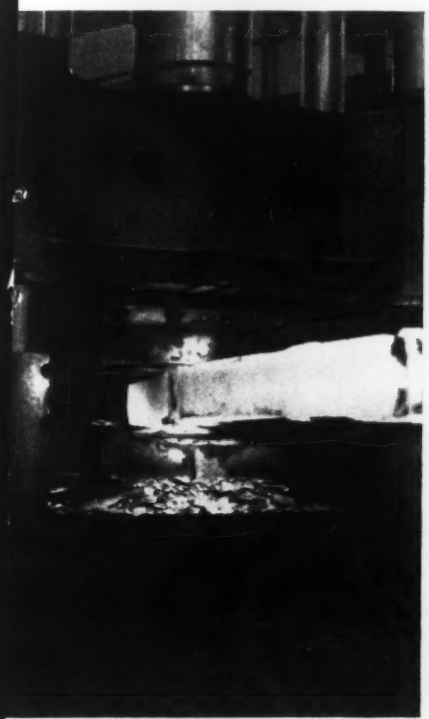
The line-up, left to right: a 1500-ton hydraulic trimming press; a 50,000-pound steam drop hammer; a 3,000-ton pre-form press; a 750-ton blocking press.

THE LARGEST PRIVATELY-OWNED FORGING HAMMER IN AMERICA!

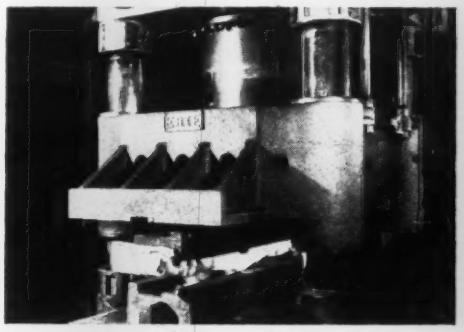
They work at Park Drop Forge Company in Cleveland, and they handle this giant 50,000-lb. Erie steam drop hammer with such precision they claim they could crack a watch crystal without damaging its works!

To meet the rugged requirements of turning out 13-foot-long diesel crankshaft sections, Park Drop Forge looked to Erie Foundry for a complete installation of forging machines including hammer and presses.

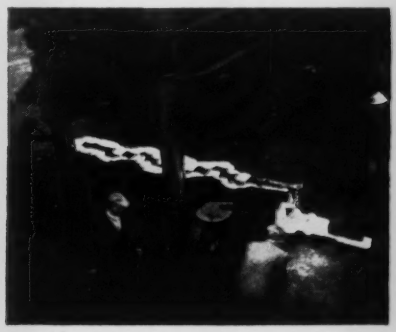
If your requirements include forging machinery or rugged hydraulic presses, why not consult Erie Foundry Company?



Now the mighty giant 50,000-lb. Erie hammer starts the work of forging the 13-foot crankshaft section.



The blocking press in action . . . first step in forging bar stock.



The snaking press makes a preform of the bar to prepare it for the hammer.

In the Erie trimming press, the flash stays on top of die while forged shaft drops through.

ERIE

Greatest name
in forging machinery
since 1895

ERIE FOUNDRY CO.

ERIE, PA.

Scrap Rises Despite Slow Demand

STEEL's composite on the prime grade advances 33 cents to $43 a ton. Strong fourth quarter is thought to hinge on amicable settlement of automotive labor negotiations

Scrap Prices, Page 136

Pittsburgh—Brokers and dealers are awaiting news of the automotive labor negotiations with bated breath. They're confident the market will rise once the uncertainties of fourth quarter steel production have been resolved. At the moment, prices are stabilized, and little scrap is moving.

Philadelphia—Prices are steady, but consuming demand continues light. The only revision in the price listings is a $2 advance on heavy breakable cast to $44, delivered.

New York—With some export business closed for October, brokers have advanced their buying prices on No. 1 heavy melting steel and No. 1 bundles to $33-$34, and on No. 2 heavy melting to $30-$31. Other grades are unchanged.

Domestic demand continues slow. But with steel production edging upward, the general market undertone is fairly strong.

Chicago — The scrap market is quiet, with consumer interest lacking and the outlook for steelmaking in the next few weeks somewhat uncertain. If the auto workers strike, steel production is thought likely to suffer. That would cut demand for melting materials.

Cleveland—There's little activity here and in the Valley. Steel mills are not buying despite rising ingot operations. The Cleveland ingot rate last week hit 60.5 per cent, up 6 points from the preceding week. Valley operations, at 59 per cent, are up 1 point from the week before. Uncertainty attending automotive labor negotiations is largely behind the slack buying. Settlement of the labor problem, it is said, would bring out heavy mill and foundry buying and assure an active fourth quarter.

Detroit—Dealers and brokers are holding prices unchanged as they wait for monthend auto lists. Developments in the automotive labor situation may bring out some speculative trading. The feeling is that the auto lists may be $1 to $1.50 a ton below last month's closings. Another indication of market weakness shows in dealers' prices to industrial peddlers. Last week, dealers were paying $31 for sheet clips. At the start of the month the price was $37.

Buffalo—Cast scrap is up another $1 a ton, but the steel mill grades are unchanged. A leading consumer paid $42 for cupola cast. No. 1 machinery cast at $46 is also up $1.

There has been no new business in the steel grades, and the market undertone in that area is a shade easier. No. 1 heavy melting remains in the $34-$35 range, though some sales to out-of-district users are reported at $37.

WANTED

Production machining on a job or long-term basis . . . . . contracts for precision components, assemblies and complete machine building.

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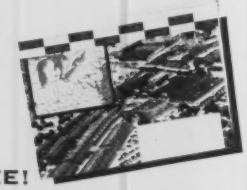
We welcome your inquiry or blueprints for quotation.



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STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Sept. 17 1958 $43.00
Week Ago $42.67
Month Ago $41.33
Year Ago $48.17
Aug. Avg. $41.58

Cincinnati—The market is quiet, but a price test is expected when industrial lists are closed. Brokers think prices may move ahead. Rail grades moved up $2 a ton last week on renewed buying activity in re-rolling rails.

St. Louis—Prices are unchanged, but the market remains strong. Mills are taking all big tonnage grade offers.

Birmingham — An Atlanta mill bought sizable tonnages of No. 2 heavy melting at $32, delivered, last week—the same price it paid for its last purchase.

The movement of the open hearth grades is sluggish. The same is true of electric furnace material and scrap for the foundries.

Houston—Prices are unchanged with trading quiet. No new mill buying is expected until next month. Gulf Coast export activity is dead, and no revival is in sight. The inflow of industrial and country scrap is thin. In south and west Texas, Mexican demand is active, with prices strong but unchanged.

Seattle—Consumers are showing little interest. Sales are small, and exporters are marking time. Dealers look for some improvement soon.

Los Angeles—The market continues to mark time, with trading insufficient to provide a price test. Some dealers expect a break in the market. Inventories of large consumers are said to be sufficient to support their operations the remainder of the year.

San Francisco—There is little activity in the local market. A leading steelman and nine other businessmen from Japan visited the area last week, but their call is not expected to result in any export business.

Scrap Freight Gets O.K.

Scrapmen have won formal approval by the Interstate Commerce Commission of a compromise freight rate increase on scrap of 3 per cent, maximum 40 cents a ton, in place of a flat 40 cents a ton sought by eastern railroads.

The compromise, proposed by the Institute of Scrap Iron & Steel Inc., will save the industry a substantial sum. Based on 1957 shipments, amounting to about 35 million net tons, the flat 40-cent increase would have cost $14 million or more in line-haul rates alone.

The institute also has been successful in having a proposed reduction in free time at ports eliminated. Also, it has persuaded the ICC that a proposed 20 per cent increase in switching charges be held to 5 per cent; that proposed increases for diversion, reconsignment, and related services be held to 10 per cent; and that a proposed increase to $20 for stopoff for partial unloading, or to complete loading, be held to 10 per cent.

The ICC permitted a 6 cents per 100 lb increase in line-haul rates on export, import, coastwise, and intercoastal freight from, or to, U. S. or Canadian ports. Also, it permitted a $4 charge for services previously performed free by the railroads.

Pig Iron . . .

Pig Iron Prices, Page 130

Shipments of pig iron this month are at the best rate recorded this year. Automotive foundries are showing increases in operations, but jobbing shops are running well below full capacity and have comparatively small order backlogs. Chief support of the market comes from

(*Please turn to Page* 141)

OWNER MANAGED..
LORD BALTIMORE HOTEL
Stands to reason . . . owner operation logically assures you a more personal attention to your comfort and convenience. Baltimore's best.

WARD STEEL CO.
We specialize in
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Phone: Grovehill 6-2600

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Sept. 17, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Sept. 17	$43.00
Sept. 10	42.67
Aug. Avg.	41.58
Sept. 1957	47.73
Sept. 1953	36.95

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	34.00-35.00
No. 1 dealer bundles	*43.00-44.00*
No. 2 bundles	31.00-32.00
No. 1 busheling	*43.00-44.00*
No. 1 factory bundles	47.00-48.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	49.00-50.00
3 ft lengths	48.00-49.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	49.00-50.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	23.00-24.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	52.00-53.00
Angles, splice bars	52.00-53.00
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	220.00-225.00
18-8 turnings	115.00-120.00
430 bundles & solids	120.00-125.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	46.00-47.00
No. 1 hvy melt, dealer	44.00-45.00
No. 2 heavy melting	37.00-38.00
No. 1 factory bundles	50.00-51.00
No. 1 dealer bundles	44.00-45.00
No. 2 bundles	31.00-32.00
No. 1 busheling, indus.	46.00-47.00
No. 1 busheling, dealer	44.00-45.00
Machine shop turnings	22.00-23.00
Mixed borings, turnings	24.00-25.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals, 3 ft	49.00-50.00
Punchings & plate scrap	50.00-51.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	44.00-45.00
Unstripped motor blocks	39.00-40.00
Clean auto cast	52.00-53.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt.	49.00-50.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	56.00-57.00
Axles	70.00-71.00
Rails, rerolling	65.00-66.00

Stainless Steel Scrap

18-8 bundles & solids	*215.00-220.00*
18-8 turnings	*115.00-120.00*
430 bundles & solids	*115.00-120.00*
430 turnings	65.00-70.00

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	44.00-45.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	46.00-47.00
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	39.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	*45.50*

Railroad Scrap

No. 1 R.R. heavy melt.	44.00
Rails, 18 in. and under	52.00
Rails, random lengths	47.50
Rails, rerolling	61.00
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	23.00-24.00
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	*45.00-46.00*
Structurals & plates	44.00-45.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Unstripped motor blocks	42.00-43.00
Charging box cast	22.00-23.00
No. 1 wheels	39.00-40.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	51.00-52.00
Rails, rerolling	59.00-60.00
Rails, random lengths	*47.00-48.00*
Angles, splice bars	47.00-48.00

PHILADELPHIA

No. 1 heavy melting	40.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	25.00
No. 1 busheling	40.00
Electric furnace bundles	41.00
Mixed borings, turnings	20.00-21.00†
Short shovel turnings	23.00-24.00
Machine shop turnings	20.00-21.00
Heavy turnings	34.00
Structurals & plate	42.00-44.00
Couplers, springs, wheels	45.50†
Rail crops, 2 ft & under	57.00-58.00

Cast Iron Grades

No. 1 cupola	40.00
Heavy breakable cast	*44.00*
Malleable	58.00-59.00
Drop broken machinery	48.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*33.00-34.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*33.00-34.00*
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	14.00-15.00
Low phos. (structurals & plates)	35.00-36.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	175.00-180.00
18-8 borings, turnings	70.00-75.00
410 sheets, clips, solids	50.00-55.00
430 sheets, clips, solids	70.00-75.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	*15.00-16.00*
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 5 ft and under	39.00-40.00
2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	*41.00-42.00*
No. 1 machinery	*45.00-46.00*

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	32.50-33.50
No. 1 bundles	38.50-39.50
No. 2 bundles	25.00-26.00
No. 1 busheling	38.50-39.50
Machine shop turnings	18.00-19.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	20.00-21.00
Cast iron borings	17.00-18.00
Low phos. 18 in.	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	42.00-43.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	*44.00-45.00*
Rails, 18 in. and under	*55.00-56.00*
Rails, random lengths	*45.00-46.00*

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	38.00
No. 2 heavy melting	33.00
No. 2 bundles	24.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	*43.00*

Cast Iron Grades

No. 1 cupola	45.00
Heavy breakable	30.00†
Foundry malleable	38.00
Unstripped motor blocks	*37.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	27.00
No. 2 heavy melting	22.50
No. 1 bundles	27.00
No. 2 bundles	21.00
No. 1 busheling	27.00
Machine shop turnings	8.00-9.00
Short shovel turnings	10.00-11.00
No. 1 cast	33.00-34.00
Mixed cupola cast	*33.00-34.00*
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	33.00-34.00
No. 2 bundles	20.00-21.00
No. 1 busheling	31.00-32.00
Machine shop turnings	9.00-10.00
Mixed borings, turnings	10.00-11.00
Short shovel turnings	11.00-12.00
Punchings & plate	32.00-33.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Stove plate	27.00-28.00
Charging box cast	27.00-28.00
Heavy breakable	26.00-27.00
Unstripped motor blocks	16.00-17.00
Clean auto cast	37.00-38.00

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	17.00
Machine shop turnings	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	39.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	42.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

We learned a lesson from a lineman

"*Safety* is where I shine," one of our linemen told us recently. "Safety's one of the most important parts of my job. But *saving*—and that's important, too, for a family man—that's too tough. Why don't you guys in the office make it easy for us—like that Payroll Savings Plan for U.S. Savings Bonds?"

Of course, that is *exactly* what we want to do for *every one* of our people. We explained that to our lineman. But he certainly made us stop and think. Because if *he* didn't know about our plan for buying U.S. Savings Bonds through Payroll Savings, then many other employees must be in the same position.

We telephoned our State Savings Bond Director for help. He worked out a company-wide campaign for us. Application cards were placed in the hands of every person on our payroll. We had a *fair* participation when the campaign started. But within days afterward, we had an *excellent* percentage of bond buying employees.

It shows that practical people welcome a chance to set up this sound savings plan. Today, particularly, there are more payroll savers than ever before in peacetime. Look up *your* State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.

STEEL
The Metalworking Weekly

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE

Metal Sales Improve

Copper and zinc are looking stronger than they have all year: Sales are up; output is down; and stocks are dropping off. Lead has improved, but not as much

Nonferrous Metal Prices, Pages 140 & 141

COPPER and zinc business is on the upswing. Sales have steadily gained ground since spring. August was the best month of the year for zinc and the best since January for copper. Expectations are that September will be even better.

Equally encouraging is the drop in output to the point where producers' inventories are beginning to come down. But whether the statistical picture for copper will continue to look as good (now that Kennecott Copper Corp. and Phelps Dodge Corp. have stepped up output) remains to be seen.

Copper—Free World deliveries to fabricators in August hit 247,060 tons, compared with 220,801 tons in July, reports the Copper Institute. World refined production was down 12,000 tons to 217,914 tons with the result refined stocks took a 39,000-ton dive to 436,532 tons.

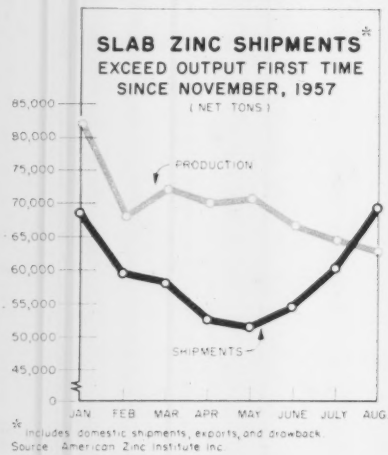
U. S. deliveries were up over 9,000 tons to 86,982 tons. Domestic refined production dipped to 100,640 tons, and refined stocks fell from 242,781 tons to 215,560 tons.

Midmonth sales reports indicate September demand is running ahead of August's for the primary producers and holding about even for custom smelters.

Copperbelt producers in Africa's northern Rhodesia were shut down by a mineworkers' walkout on Sept. 13. A prolonged strike would have a further firming effect on the world market situation.

This strike, plus a strengthening on the London Metal Exchange and growing demand both from domestic and foreign users, prompted custom smelters last week to boost their price by 0.125 cent a pound two days in a row. That put both secondary and primary copper at 26.50.

Zinc—Domestic shipments of slab zinc in August hit a 1958 high of 68,718 tons, reports the American Zinc Institute Inc. Total shipments (see chart) were also the best of the year at 69,309 tons. Equally significant: Production was down to 62,927 tons (the lowest this year), and producers' stocks went from 257,911 tons to 251,529 tons, the first time this year they've fallen.



September sales should exceed the August figure. Demand for prime western from galvanizers continues strong. (July shipments of galvanized sheet were 239,883 tons, says the American Iron & Steel Institute.) High grade sales to brass mills have picked up a little.

Lead—Sales have edged up gradually over the last several months, but the market hasn't improved nearly as much as it has for copper and zinc. Several producers report a noticeable pickup since the first of the month, notably from the construction and storage battery industries.

Better sales, plus a stronger London market and active futures trading, prompted a custom smelter to initiate a price increase to 11 cents a pound last week.

Washington Still Mum

There's no word from the White House on what action will be taken on the recommendations for higher lead-zinc duties. Chances are the President will hold off making a decision until after Oct. 1. He will need this time to study the report of the U. S. delegation to the recent unsponsored Nonferrous Metals Meeting in London, Washington sources believe.

What Happened—Three recommendations on the lead-zinc oversupply problem came out of the London meetings: 1. Limit the level of exports of ores, concentrates, and metal for one year. 2. Reduce world mine and smelter output. 3. Appoint a committee to study long range solutions to the problem.

Delegates have promised to present the proposals to their respective governments. A subcommittee is expected to study the replies to the recommendations made by producing nations.

Copper representatives agreed the metal's improved position makes any type of world agreement unnecessary at this time.

NONFERROUS PRICE RECORD

	Sept. 17 Price	Last Change	Previous Price	Aug. Avg	July Avg	Sept., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.000	26.000
Copper	26.50	Sept. 17, 1958	26.375–26.50	26.510	26.125	26.469
Lead	10.80	Sept. 17, 1958	10.55	10.646	10.800	13.800
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	95.375	Sept. 17, 1958	95.50	94.995	94.950	93.422
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	10.000

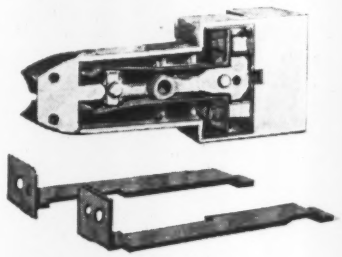
Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

CONTACT!

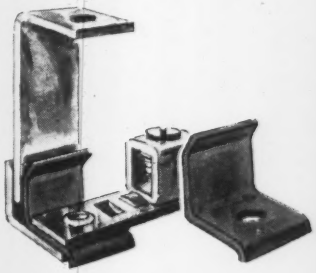
NEW "CONTACT BRONZE" STRIP KEEPS FORMED CONTACT PARTS, YET COSTS THE SPRING IN UP TO 25% LESS!

Manufacturers can now form intricate contact parts that cost less from Bridgeport's new "Contact Bronze" strip. High quality is maintained in this new, red color alloy strip by the addition of a minute quantity of phosphorus, which provides superior spring properties, even in hard-to-form parts.

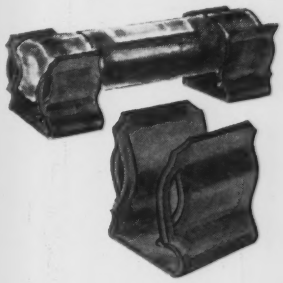
Specially engineered for the electronics industry, Bridgeport "Contact Bronze" Alloy 92 costs up to 25% *less* than metals previously used for this application. If you form or stamp shaped contact parts, learn how "Contact Bronze" can maintain quality at lower cost. Samples and a copy of the "Contact Bronze" data sheet are available from your nearest Bridgeport Sales Office. Call or write today!



These electrical terminals were originally made of phosphor bronze. Parts now are produced from Bridgeport "Contact Bronze" 92—at appreciable savings.



American Electric Switch Division, Clark Controller Co., Cleveland, Ohio, wanted a lower-cost material for pressure clips. Bridgeport "Contact Bronze" 92 met all specifications . . . good electrical conductivity to reduce heating, superior spring and mechanical properties—and all at lower cost.



A leading manufacturer of control switches needed these fuse clips with special mechanical and electrical properties. Bridgeport "Contact Bronze" 92 met the specifications—at lower cost.

matched Bridgeport Metals *to your job*

BRIDGEPORT BRASS

Bridgeport Brass Company, Bridgeport 2, Conn. • Sales Offices in Principal Cities. • In Canada: Noranda Copper and Brass Limited, Montreal

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50; f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.55 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 10.80; chemical, 10.90; corroding, 10.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-244 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-19 per troy oz.

Platinum: $62-65 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market 88.625 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 95.375.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 17.75.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25, AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.55; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $16.50 per cwt; pipe, full coils, $16.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	209

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.25-19.75; No. 2 heavy copper and wire, 17.25-17.75; light copper, 15.25-15.75; No. 1 composition red brass, 15.50-16.00; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 26.50c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.63b	46.86c	....	49.82	22.500	22.500	21.750
Yellow Brass	43.57	29.28d	44.11	46.48	17.000	16.750	15.250
Low Brass, 80%	46.03	45.97	46.57	48.84	19.000	18.750	18.250
Red Brass, 85%	46.89	46.83	47.43	49.70	19.750	19.500	19.000
Com. Bronze, 90%	48.30	48.24	48.84	50.86	20.625	20.375	19.875
Manganese Bronze	51.52	45.74	56.18	....	15.625	15.375	14.875
Muntz Metal	45.95	41.76	....	....	15.875	15.625	15.125
Naval Brass	47.83	42.14	54.89	50.99	15.625	15.375	14.875
Silicon Bronze	54.37	53.56	54.41	56.29	22.125	21.875	21.125
Nickel Silver, 10%	58.82	61.15	61.15	....	22.000	21.750	11.000
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27	23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 14.50-15.00; new brass clippings, 13.00-13.50; light brass, 9.25-9.75; heavy yellow brass 10.50-11.00; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 11.50-12.00; cocks and faucets, 12.50-13.00; brass pipe, 12.50-13.00.

Lead: Heavy, 6.50-6.75; battery plates, 2.00-2.25; linotype and stereotype, 8.50-9.00; electrotype, 7.50-8.00; mixed babbitt, 9.00-9.50.

Monel: Clippings, 32.00-34.00; old sheets, 26.00-28.00; turnings, 20.00-23.00; rods, 32.00-34.00.

Nickel: Sheets and clips, 50.00-52.00; rolled anodes, 50.00-52.00; turnings, 37.00-40.00; rod ends, 50.00-52.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.50-10.00; clean borings and turnings, 6.00-6.50; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 15.50-16.00; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 21.75; No. 2 heavy copper and wire, 21.00; light copper, 18.75; refinery brass (66% copper) per dry copper content, 20.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 21.75; No. 2 heavy copper and wire, 21.00; light copper, 18.75; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.25; yellow brass turnings, 12.25; radiators, 15.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.55.
Copper: Flat-rolled, 43.03; oval, 14.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.
Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.
Tin: Bar or slab, less than 200 lb, 114.50; 200-499 lb, 113.00; 500-999 lb, 112.50; 1000 lb or more, 112.00.
Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.55 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.
Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.
Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.
Nickel Chloride: 100 lb, 48.50; 200 lb, 46.50; 300 lb, 45.50; 400-999 lb, 43.50; 10,000 lb or more, 40.50.
Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.
Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.
Sodium Stannate: Less than 100 lb, 76.30; 100-600 lb, 67.20; 700-1900 lb, 64.50; 2000-9900 lb, 62.60; 10,000 lb or more, 61.30.
Stannous Chloride (anhydrous): 25 lb, 151.40; 100 lb, 146.50; 400 lb, 144.00; 800-19,900 lb, 103.20; 20,000 lb or more, 97.10.
Stannous Sulphate: Less than 50 lb, 136.70; 50 lb, 106.70; 100-1900 lb, 104.70; 2000 lb or more, 102.70.
Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 135)

nonintegrated steel mills, steel foundries, and ingot mold makers.

Current buying is for nearby needs; consumers show no inclination to accumulate stocks.

The Troy, N. Y., furnace of Republic Steel Corp. resumed production Sept. 15. It had been shut down since June 17. R. P. Carpenter, Buffalo district manager of Republic, says: "A general improvement in business conditions has created an increased demand for pig iron in the areas served by the Troy furnace that could be met only by additional production."

Two weeks ago, Republic announced resumption of operations at two of its New York ore mining districts, including the Chateaugay district which provides raw materials for the Troy furnace.

No. 2 blast furnace at U. S. Steel's Edgar Thomson Works was relighted Sept. 15. One of the largest stacks in western Pennsylvania, it has been completely relined since being taken out of production Sept. 1, 1957. It has a rated annual capacity of 481,500 net tons of iron.

Less Pig Iron Produced

Blast furnace production (pig iron and ferroalloys) totaled 4,304,183 net tons in July, reports the American Iron & Steel Institute. In June, output was 4,422,748 tons, and in July, 1957, it was 6,691,932 tons.

Output in the first seven months this year amounted to 30,009,189 net tons, including 278,991 tons of ferroalloys. In the same period last year, production totaled 48,350,783 tons.

Production this year by states

Blast Furnace Production—Net Tons

States:	July, 1958	Seven Months, 1958
Massachusetts, New York	208,721	1,880,524
Pennsylvania	1,078,270	7,989,909
Maryland, Virginia, W. Virginia	512,851	3,431,338
Kentucky, Tennessee, Texas	129,184	864,026
Alabama	249,694	1,915,987
Ohio	699,351	4,662,074
Indiana	598,895	3,989,595
Illinois	299,803	1,978,410
Michigan, Minnesota	269,349	1,448,252
Colorado, Utah, California	258,065	1,849,074
Totals	4,304,183*	30,009,189**

*Includes 26,668 tons of ferromanganese and spiegeleisen.
**Includes 278,991 tons of ferromanganese and spiegeleisen.
Data from the American Iron & Steel Institute.

Ferroalloys . . .

Ferroalloy Prices, Page 132

Electro Metallurgical Co., a division of Union Carbide Corp., New York, has announced price adjustments for silicon metal, magnesium-ferrosilicon, ferromanganese-silicon, all grades of ferrosilicon, and certain ferrochrome alloys. The new base prices are effective Oct. 1.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

7000 tons, state viaduct, Bruckner Boulevard, Bronx, New York, through Slattery Construction Co., Maspeth, Long Island, general contractor, to Ingalls Iron Works Co., Birmingham.

CLASSIFIED

FOR SALE

Wheelabrator cabinet will handle steel plates, sheets, drums. Working area 96" by 36".

Wheelabrator shot peening cabinet with work car inside.

Wheelabrator cabinet for small cylinder drums, angles, pipes, small parts.

Wheelabrator tumblast 36" by 42" sand blasting tanks suction cabinets. Vapor hydroblast cabinets, dust collectors. Tensile brinell testers. Degreasers.

We solicit your inquiry.

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WANT TO BUY

Steel By-Products Discs

2" to 2½" Diameter .060 to .125
4½" Diameter .060 to .125
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11" to 12½" Diameter .085 to .095

Hot or Cold Rolled

KEYSTONE LAMP MFG. CORP.
Purchasing Department
Phone Slatington, Pa. POrter 7-3821

INDUSTRIAL ENGINEERS

Career opportunities are available for qualified men with at least one or two years experience in Standard Cost, Time Study or Incentive Development and/or Methods Analysis. Prefer steel operations background. Also openings available for recent college graduates with technical degrees. Prompt consideration given all replies. Submit resume to:

DIRECTOR OF EMPLOYEE SERVICES
GREAT LAKES STEEL CORPORATION
Ecorse, Detroit 29, Michigan

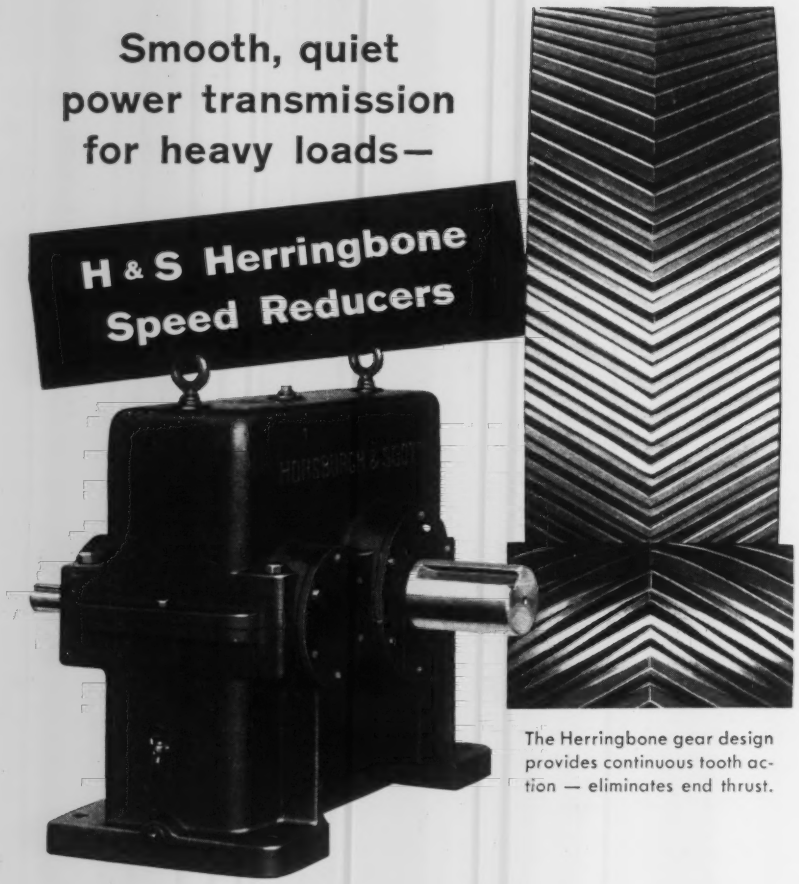
Help Wanted

BLAST FURNACE
COKE OVEN
SUPERVISORS

Well established corporation operating blast furnaces and coke ovens in Alabama needs technically trained and experienced supervisors capable of qualifying in short time for high-level management positions at both blast furnace and coke oven plants. Submit full resume. All replies strictly confidential. Reply Box 637, STEEL, Penton Bldg., Cleveland 13, Ohio.

Smooth, quiet power transmission for heavy loads—

H & S Herringbone Speed Reducers



The Herringbone gear design provides continuous tooth action — eliminates end thrust.

Built for heavy load conditions, Horsburgh & Scott Herringbone Speed Reducers give you dependable economical service. They're available in single, double and triple reduction units. Check these 9 points of superiority:

1. Overall design conforms to AGMA specifications.

2. All bearing loads are balanced, due to the symmetrical design of the gearing.

3. Oversize bearings and low speed shaft provide tremendous overhung load capacity.

4. Heavy wall and base-pad thickness provides extra housing rigidity.

5. Housing designed with box-type construction for maximum thermal capacity.

6. Every gear is accurately sized and then cut on a modern Sykes continuous tooth gear generator.

7. All pinions are integral with the shafts and are made of heat treated alloy forgings.

8. Dust and oil-proof seals are provided on shafts extending outside the housing.

9. Splash lubrication floods all bearings and gears.

You'll find a wealth of information in our Catalog 55 describing our complete line of Speed Reducers. Write for it, or ask your nearby H & S representative.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 Hamilton Avenue
Cleveland 14, Ohio

1215 tons, central heating plant, Ft. George G. Meade, Md., to G. & H. Steel Co., Washington, D. C.; Irons & Reynolds Inc., Washington, general contractor.

950 tons, Home for the Indigent & Infirm, Luzerne County, Pennsylvania, to the Ostrander Iron Works Inc., Wilkes-Barre, Pa.

500 tons, RCA factory building, Morristown, N. J., to the Elizabeth Iron Works, Union, N. J.

215 tons, four state bridges, North Smithfield, R. I., to Tower Iron Works, Providence, R.I.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

200 tons, structurals and bars, four-story addition, St. Francis Hospital, Hartford, Conn., to Charles Parker Co., Wallingford, Conn. (structurals), and Scherer Steel Co., Hartford, Conn. (reinforcing); Southern New England Contracting Co., Hartford, general contractor.

200 tons, Washington State bridge, Clark County, to Poole, McGonigle & Dick, Portland, Oreg.; J. B. Alexander, Seattle, general contractor.

165 tons, construction for Fisher Flouring Mills, shopping center, and special services building, Seattle, to Leckenby Structural Steel Co., Seattle.

105 tons, state highway bridge, Augusta, Maine, to Bancroft & Martin Rolling Mills Co., South Portland, Maine; H. E. Sargent Inc., Stillwater, Maine, general contractor.

100 tons, West Coast Air Lines hangar, Seattle, to Leckenby Structural Steel Co., Seattle.

75 tons, additional award for the Washington Water Power Co.'s Noxon Rapids power project, Montana, to Bethlehem Pacific Coast Steel Corp., Seattle.

STRUCTURAL STEEL PENDING

500 tons, Pollock Circle projects 1 and 2, Penn State University, State College, Pa., bids Oct. 2.

250 tons, RCA plant addition, Somerville, N. J., bids closed.

205 tons, powerplant, state penitentiary, Lewisburg, Pa.

100 tons, University of Washington, Seattle, powerplant; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

300 tons, fermenting cellar, Sick's Brewery, Seattle, to Northwest Steel Rolling Mills Inc., Seattle; John H. Sellen Construction Co., Seattle, general contractor.

410 tons, four state bridges, North Smithfield, R. I., to Plantations Steel Co., Providence, R. I.; Campanella & Cardi Construction Co., Hillsgrove, R. I., general contractor.

250 tons, Washington State bridge, Clark County, to Joseph T. Ryerson & Son Inc., Seattle; J. B. Alexander, Seattle, general contractor.

250 tons, Washington State bridge, Clark County, to Soule Steel Co., Portland, Oreg.

179 tons, addition to Franklin High School, Seattle, to Bethlehm Pacific Coast Steel Corp., Seattle; James I. Barnes Construction Co., Seattle, general contractor.

150 tons, Washington State highway bridge, Adams County, to Bethlehem Pacific Coast Steel Corp., Seattle; W. G. Meyers & Son, Spokane, Wash., general contractor.

100 tons, government bridge, Chief Joseph Dam, to Bethlehem Pacific Coast Steel Corp., Seattle; Cherf Bros. & Sandkay, Ephrata, Wash., general contractor.

REINFORCING BARS PENDING

750 tons, flood control, Green River, Washington State; bids to U. S. Engineer, Seattle, about Nov. 21.

185 tons, two Montana State highway bridges, Mineral County; bids to Helena, Mont., Sept. 24.

110 tons, two Montana State highway bridges, Cascade County; bids to Helena, Mont., Sept. 24.

100 tons or more, Washington State College, Bellingham, Wash.; bids in.

Advertising Index

Acme Steel Products Division, Acme Steel Co. 128
Aetna-Standard Engineering Co., The ..... Inside Back Cover
Alco Products, Inc. 18, 19
American Cast Iron Pipe Co., Special Products Division 122
American Society for Metals 26

Bailey, William M., Co. 89
Baldwin-Lima-Hamilton Corporation, Loewy-Hydropress Division 45
Bethlehem Steel Co. 1
Bliss, E. W., Co., Mackintosh-Hemphill Division 27
Bridgeport Brass Co. 139

Carpenter Steel Co., The, Alloy Tube Division 114, 115
Chicago Steel Service Co. 94
Coffing Hoist Division of Duff-Norton Co. .. 93
Colorado Fuel & Iron Corporation, The ..28, 127
Cooper-Bessemer 64, 65
Copper & Brass Research Association, The ..20, 21
Cowles Tool Co. 106
Crucible Steel Company of America 11

Detroit Steel Corporation 34
Duff-Norton Co., Coffing Hoist Division 93
Dyson, Joseph, & Sons, Inc. 106

Electric Furnace Co., The 10
Erie Bolt & Nut Co. 117
Erie Foundry Co. 133
Esso Standard Oil Co. 58

Falk Corporation, The 17
Formed Steel Tube Institute 97

General Motors, Saginaw Steering Gear Division 54

Hassall, John, Inc. 57
Haynes Stellite Co., Division of Union Carbide Corporation 90, 91
Heald Machine Co., The .... Inside Front Cover
Horsburgh & Scott Co., The 142

Inland Steel Co. 144

Jones & Lamson Machine Co. 24
Jones & Laughlin Steel Corporation, Stainless & Strip Division 110

Kaiser Engineers Division of Henry J. Kaiser Co. 61
Keystone Lamp Mfg. Corporation 141
Keystone Steel & Wire Co. 25

Lamson & Sessions Co., The 2
Landis Machine Co. 22, 23
Landis Tool Co. 4
Lilly, Eli, & Co., Agricultural & Industrial Products Division 13, 14, 15
Lincoln Electric Co., The 36

Linde Co., Division of Union Carbide Corporation 30
Loewy-Hydropress Division, Baldwin-Lima-Hamilton Corporation 45
Lord Baltimore Hotel 135

Mackintosh-Hemphill Division of E. W. Bliss Co. 27
Magnaflux Corporation 78
Memphis Industrial Development Committee.. 67
Micromatic Hone Corporation 108, 109
Miller Electric Manufacturing Co., Inc. 116

Niagara Blower Co. 16
Nilson, A. H., Machine Co., The 68

Ohio Crankshaft Co., The 3

Pennsalt Chemicals Corporation 112

Republic Steel Corporation 8, 9
Research-Cottrell, Inc. 100, 101
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 28
Royal McBee, Data Processing Division 77
Ryerson, Joseph T., & Son, Inc. 33

Saginaw Steering Gear Division of General Motors 54
Sciaky Bros., Inc. 50
Shepard Niles Crane & Hoist Corporation .. 105
Silent Hoist & Crane Co. 29
Starrett, L. S., Co., The 53
Superior Tube Co. 46

Textile Machine Works, Contract Division ... 134
Thomson, Judson L., Mfg. Co. 119
Timken Roller Bearing Co., The, Steel & Tube Division ..... Back Cover
Townsend Co. 102
Transue & Williams 63

Union Carbide Corporation, Haynes Stellite Division 90, 91
Union Carbide Corporation, Linde Division .. 30
United States Rubber Co., Mechanical Goods Division 87

Wales Strippit Co. 12
Wallingford Steel Co., The 107
Ward Steel Co. 135
Wickwire Spencer Steel Division, The Colorado Fuel & Iron Corporation 127

Yoder Co., The 6
Youngstown Sheet & Tube Co., The 7

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Table of Contents, Page 5

Classified Advertising, Page 141

Coming Sept. 29 IN STEEL

Work Simplification

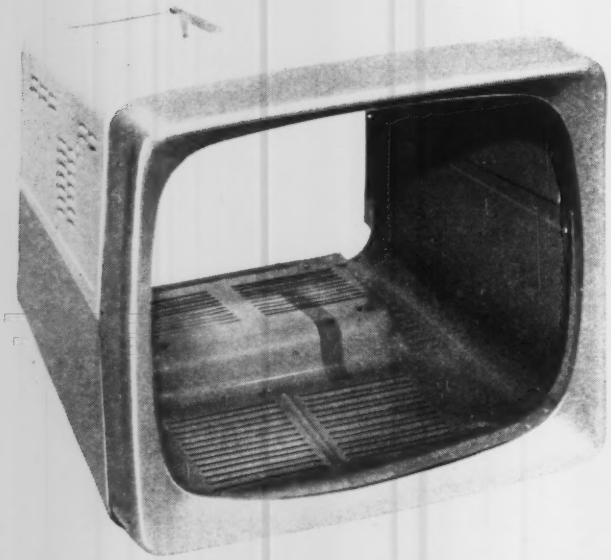
To boost productivity, consult your employees. The best consultants you can hire may already be on your payroll. Several hundred companies discovered that was true when they set up work simplification programs.

What is work simplification? How is it administered? How much and what kind of training is involved? How can it aid in cost cutting? How do employees react to the program? How do you promote it and sustain interest in it?

STEEL will discuss these and other questions in the Sept. 29 issue. When rising costs can't be passed on, higher efficiency is imperative if profits are to be maintained. The Sept. 29 story will tell how a work simplification program can help.

Inland "job-tailored"
Cold Rolled Sheets work better

product: Television Cabinets



problem:

For Cabinet:
A smooth, flat steel sheet was required that would provide the right surface for finishing, time after time.

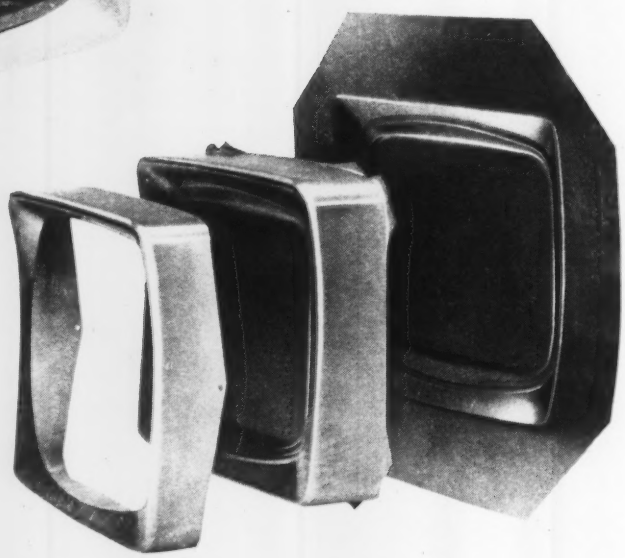
For Picture Tube Frame:
A steel that would take a difficult draw in stride, and also possess necessary surface characteristics for finishing.

solution:

Inland Cold Rolled commercial quality sheets provided all the properties needed to meet the requirements for cabinet application.

An Inland drawing quality Cold Rolled Sheet produced with the desired ductility and surface filled the bill for the picture tube frame.

Both sheets were "job-tailored" for this customer by Inland Steel Cold Rolled Sheet specialists.



INLAND STEEL

Cold Rolled Sheets

At your service in 1958... Inland's new Cold Mill and a 50% increase in capacity for cold rolled sheet products.

Sales offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis Kansas City • Indianapolis • Detroit • New York

Here the Multi-Strand is producing three 3⅛" O.D. x .350 copper tubes down to 1½" O.D. x .080. The machine can be used for copper, brass, aluminum or steel tubes.

MULTI-STRAND COLD TUBE ROLLING MILL

"Great Advancement for Economical Production of Small Diameter Tubing"

This is a breakdown process — producing a copper tube 1½" O.D. direct from a pierced or extruded shell 3 inches in diameter.

The production, considering the heavy reduction of 90%, is equivalent to five cold draw passes and the full production of two triple drawbenches (one 150,000 lbs., one 100,000 lbs.). The rolling method eliminates pointing of tubes, sawing and crane handling. The tubes, without annealing, can go directly to a Bull Block or Drawbench for final reduction.

This revolutionary method, developed by Aetna-Standard, results in a new economical way of producing small diameter tubing. The initial installation is producing tubes in quantity beyond original expectations.

- Much less handling.
- Heavy reductions on three tubes at a time.
- A ten-to-one elongation.
- Saves man-hours, floor space and tube handling.

AETNA • STANDARD

THE AETNA - STANDARD ENGINEERING COMPANY

GENERAL OFFICES: PITTSBURGH, PA. • PLANTS: ELLWOOD CITY, PA., WARREN, OHIO • RESEARCH LABORATORY: AKRON, OHIO

CONTINUOUS GALVANIZING LINES • CONTINUOUS ANNEALING LINES • CONTINUOUS ELECTROLYTIC TINNING LINES • SIDE TRIMMING AND SHEAR LINES AND OTHER FINISHING EQUIPMENT • CONTINUOUS BUTT WELD PIPE MILLS • SEAMLESS TUBE MILLS • DRAWBENCHES AND OTHER COLD DRAW EQUIPMENT • ROLLS AND CASTINGS • EXTRUDERS, MILLS, PRESSES FOR RUBBER, PLASTIC AND CHEMICAL

New—from Timken Company Research...

TBS 600
a thru-hardening steel

CBS 600
a carburizing steel

...for bearing and aircraft use at temperatures up to 600° F.

TO meet the increasing temperatures of jet and rocket craft, The Timken Roller Bearing Company has developed two new low alloy steels with high recovered hardness and good resistance to tempering for operation up to 600° F. These steels are especially suited to anti-friction bearings as well as other aircraft and missile uses. They have been thoroughly tested under simulated service conditions and are available in the form of seamless tubing, bar stock, bars and billets, and ball or roller wire.

The thru-hardening steel—Timken TBS 600 steel—has a recovered hardness of 59 Rockwell C measured at room temperature after holding 500 hours at 600° F. Hot hardness at 600° F. is 56 Rockwell C which is extremely high for a low alloy steel.

The carburizing steel—Timken CBS 600 steel—exhibits a hot hardness of 56 Rockwell C and a recovered hardness of 61 after 500 hours at 600° F., at the 1% carbon level. Corresponding hardness for the core is 55 and 58 Rockwell C. Both steels contain less than 5% alloying elements.

TBS 600 and CBS 600 can be machined and heat treated in practically the same way as their normally used counterparts. For more information call or write: The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN STEEL

Fine Alloy

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING